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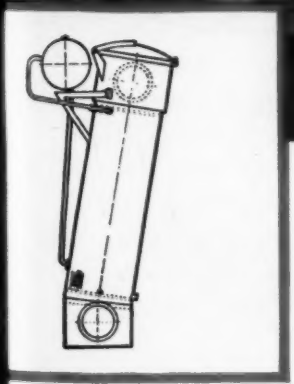

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long-lived and bo

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Look at the photograph at left—a cast iron gas main uncovered for inspection on its 100th Anniversary of continuous service, and found to be in good condition for another century. Charleston is one of a number of cities with cast iron gas mains which have passed the century mark in service. The long life of cast iron pipe is not an estimate, but a matter of record.

Look at the photograph at right, a close-up shot of the new standardized mechanical joint. This is the joint, furnished exclusively with cast iron pipe, which many gas utilities are now standardizing on for these reasons—speed and simplicity of joint assembly which means more lengths laid per day by trained or untrained men—but, more importantly, because the new standardized mechanical joint cast iron pipe is *long-lived and bottle-tight* under all normal operating pressures—*and,* is interchangeable as to fittings and accessories supplied by all makers. Cast Iron Pipe Research Association, Thomas F. Wolfe, Research Engineer, Peoples Gas Building, Chicago 3, Ill.

STANDARDIZE ON . .

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PIPE

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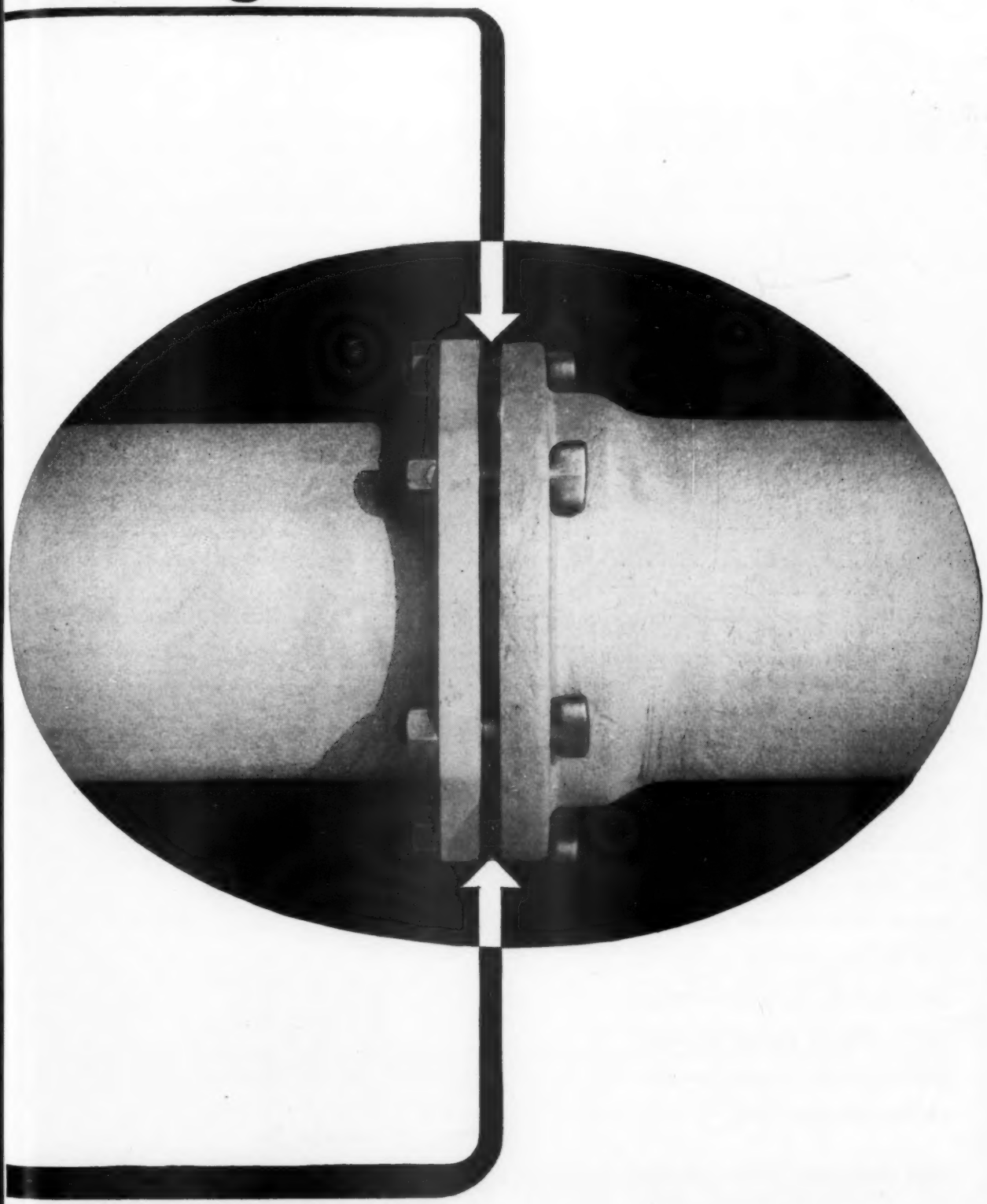
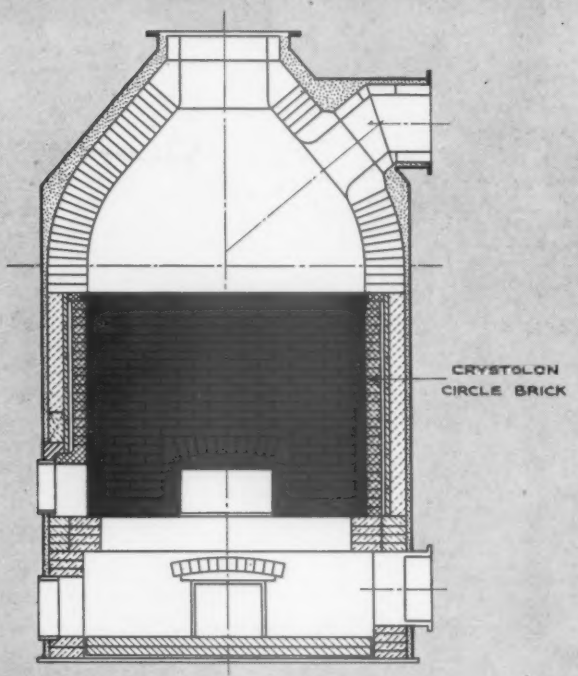


Generator lining pays for itself in One Year. . . when long-lived CRYSTOLON Brick are used. . .

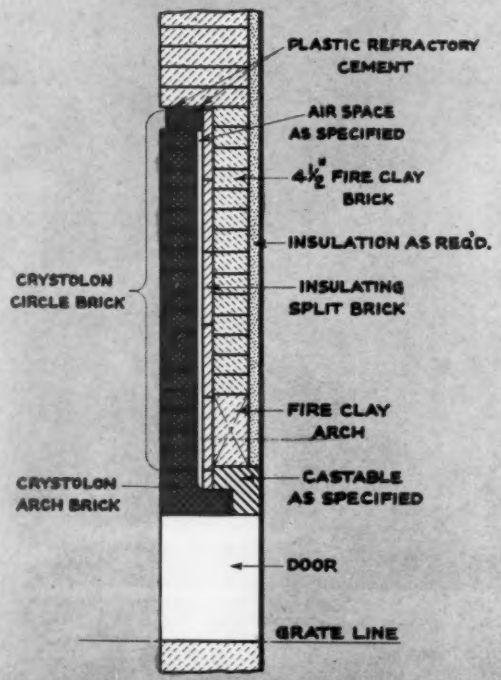


The commercial manufacture of gas involves the skillful handling of high temperatures which are accompanied by severe chemical conditions. One of the basic problems in gas production, therefore, is a refractory problem. The most successful refractory for lining gas generators is silicon carbide which Norton Company manufactures under the trademark of CRYSTOLON. CRYSTOLON brick and shapes are helping many plant superintendents in three ways: 1. increased plant capacity; 2. decreased maintenance costs; 3. long lining life.

(left) Sectional drawing of gas generator lined with CRYSTOLON refractory shapes.

Where CRYSTOLON brick are used to line the fire zone of the generator, "downtime" for clinkering is greatly reduced. These brick present an impenetrable surface to clinkers with the result that walls are quickly cleaned leaving a larger effective furnace cross-section than with less refractory brick.

(right) Cross-section of gas generator wall showing details of refractories including CRYSTOLON inner lining.



CRYSTOLON brick decrease maintenance cost by greatly extending periods between repair jobs and by reducing cleaning time. Because of the dense, hard surface of CRYSTOLON brick it is only necessary to break the clinker ring in one place and the entire ring will then fall free. CRYSTOLON linings often pay for themselves the first year by savings in cleaning costs alone.

The long service given by CRYSTOLON brick results from their great refractoriness, chemical stability and resistance to abrasion, to the chemical action of molten slag and to the penetration of molten ash. The results which may be expected from the CRYSTOLON lining will vary with different operating conditions. In some cases, a total operating time of 8,000 hours is considered satisfactory. Over 22,000 hours have been attained without major repairs.

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Worcester 6, Massachusetts

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S. G. KRAKE, *President and Treasurer*

M. E. KELLEHER, *Secretary*

S. G. KRAKE, *Managing Editor*

H. T. MATTHEW, *Business Manager*

JAMES C. MUNN, *Midwest Representative*
2656 East 126th St., Cleveland 20, Ohio
Tel. Cedar 7783

JEROME W. POWER, *Chicago Representative*
520 North Michigan Boulevard
Tel. Superior 1043

J. A. KENDALL, *Pac. Coast Representative*
2676 Terminal Annex, Los Angeles 54
Tel. Atlantic 1-7272

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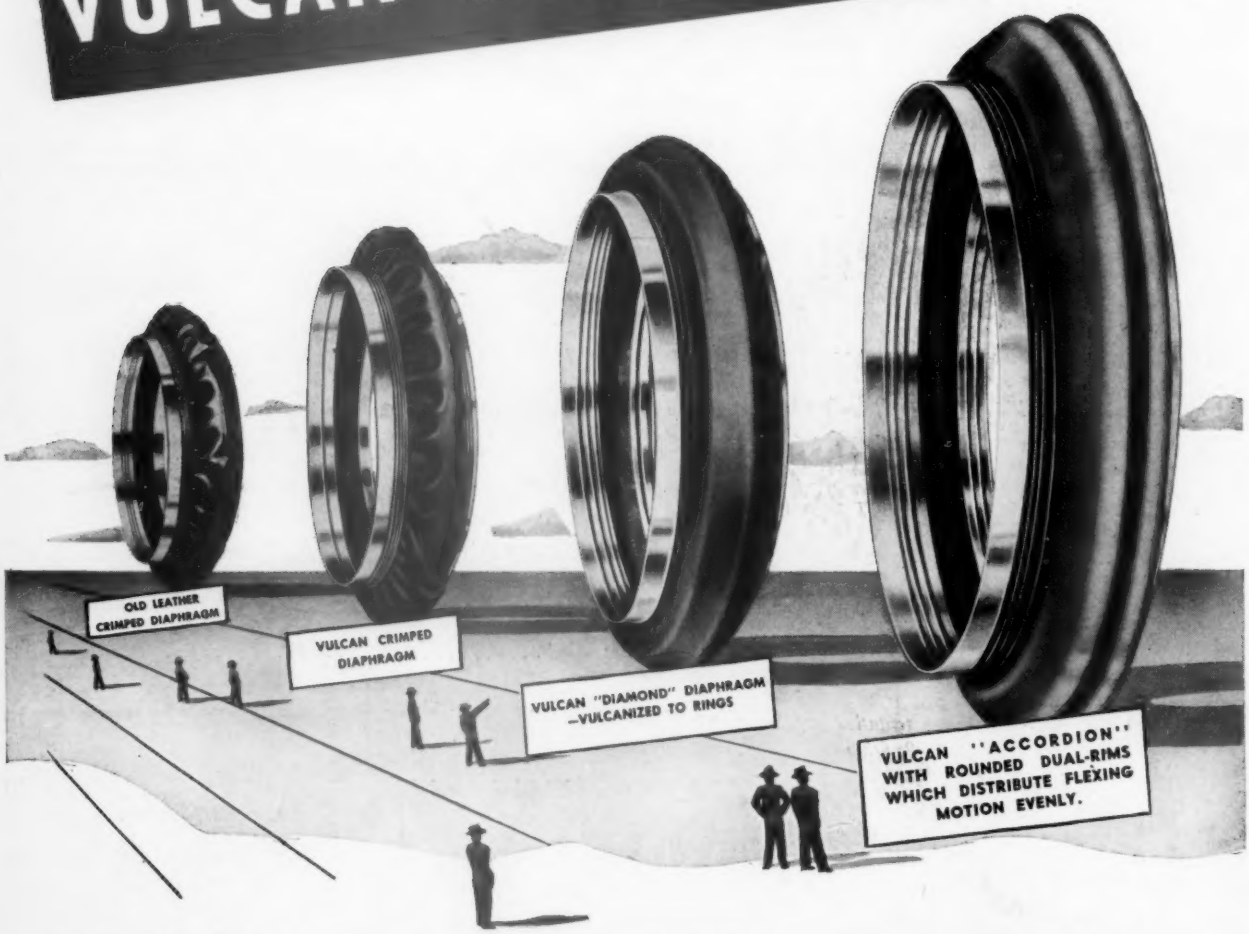
Evolution of the VULCAN DIAPHRAGM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APRIL 1947

AMERICAN GAS JOURNAL

VOLUME 166 No. 4

Water Gas Generator Air Supply

By H. A. Reynolds,

Sales Engineer
Turbine Equipment Co. of New England
Boston, Mass.

BECAUSE of the greater power required to drive the higher pressure blowers employed on large modern water gas machines, and because of the recent investigations into the effect of generator air pressure variations on the gas-making cycle and on the carry-over of coke, increasing interest has been shown in the characteristics of water gas blowers. The blower is therefore emerging from the status of a minor accessory to that of one of the major pieces of apparatus in the plant. Its proper selection and installation will have a considerable effect on the over-all efficiency and operating convenience of the plant.

Present day practice has, of course, leaned towards pressures and volumes considerably in excess of those employed a few years ago. Today we find requirements of 30,000 to 35,000 c.f.m. at pressures of 70" to 80" are commonplace, while in some cases the volumes run as high as 50,000 c.f.m. The power required to drive these blowers will run from 600 to 1,000 Hp.

While much of this discussion is concerned with the proper and intelligent selection of blowers for the high blasting rates used on the newer, larger sets, many of the principles of application can be profitably applied to increasing the results on older sets of practically any size.

Pressure Variations

There has been much discussion recently over the results of investigations into the behavior of the generator fire under the conditions of varying air pressures found in the actual operation of a large water gas machine. It has been found that sudden increases in generator air pressure, such as occur when the carburetor secondary air valve is shut on many sets, will cause a "lifting" of the fire with consequent loosening of the coke and considerable carry-over. Also, it has been noted that the generator air pressure gradually falls as more and more air is bled into the carburetor, and it has been concluded that a shorter air blow and reduced carry-over could be developed if the generator air pressure were to be kept at a constant value. This is undoubtedly correct and we of the blower industry are highly encouraged by this greater interest and appreciation of the results that can be achieved by proper selection and application of the blower.

Blower Requirements

There is no question but what the blower should have a so-called "flat" or constant-pressure characteristic. That is, the pressure should remain substantially constant regardless of the volume being used by the set. As is well known, the centrifugal blower is self-governing in that it automatically adjusts its delivery volume to the resistance placed on the discharge line. The resistance is generally of two types: pipe losses and orifice losses.

When blowing the generator, the losses consist of pipe friction, elbow and fitting losses, and orifice losses through the shells. At vol-

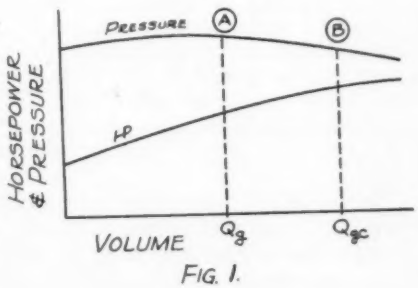


FIG. 1.

ume Q_g this places us at "A" on the blower characteristic curve, (Fig.1). When additional air is bled from the blast main to provide secondary air for the carburetor, the volume slowly increases to Q_{gc} and point "B" on the characteristic curve. Now, depending upon the age and design of the blower, point "B" may be from one to several inches below the pressure at point "A". Operators will quickly point out that the generator air pressure varies more than "several" inches and this is because the change in pressure due to the inherent characteristics of the blower is additively compounded by the increased friction and elbow losses in the blast main when the volume flowing increases from Q_g to Q_{gc}.

Are these blast main losses considerable, or is the pressure change primarily due to the characteristics of the blower?

Pressures

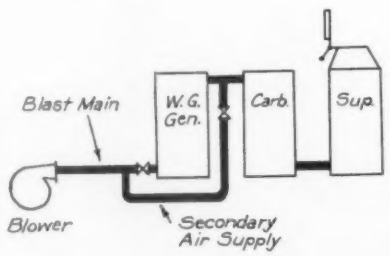
It will be found that if a blower is adequately sized for the required duty there will seldom be more than 10″ difference between the pressure at Q_g and at Q_{gc}. Tests have shown, however, that the ash-pit pressure varies about 25″ between these two conditions. The major source of pressure variation must then be due to conditions other than the pressure characteristic of the blower. Or, if a blower has a pressure characteristic with no variation whatsoever in pressure between Q_g and Q_{gc} it would still leave 60% or more of the troublesome elements in the air system of the average water gas machine. Where, then, does the balance of the trouble lie? A few computations of duct velocities and duct pressure drops will quickly indicate that it is largely in the Blast Main.

A blower with a substantially "constant-pressure" characteristic might be considered analogous to a direct current generator delivering a steady 110 volt potential to a variable circuit. The blast main would be considered as a resistance, the generator as a large resistance, and the carburetor as an additional resistance (Fig. 2). The carburetor secondary air supply is then drawn through a parallel circuit that by-passes the generator and which has a switch to cut it in or out of the circuit. The quantity of air flowing would then be analogous to the current amperage.

When the parallel circuit switch is open, the current is determined by the 110-volt potential divided by the sum of resistances. This determines I_g, which is analogous to Q_g. When the switch is closed (Fig. 2a), the low resistance of the by-pass circuit causes an increased flow through the blast main resistance. This increases the loss of potential (analogous to air pressure) which in turn reduces the flow of current through the fixed generator resistance. Obviously, the only way to secure anything approaching constant current through the generator will be by reducing the blast main resistance as nearly to zero as possible. With a dirty carburetor (very high resistance) the back pressure will build up in the carburetor as the flow increases, providing another but nevertheless somewhat controllable element of pressure variation.

Power Conservation

There is no question but what some compromise must be made between economic and building space limitations as compared to the theoretically perfect blast main design. There are, however, many changes that could inexpensively and simply be made that would make greater air pressures available, or if adequate air is now being received, would permit slowing down the turbine to eliminate the needless dissipation of power, since the power expended in overcoming needless duct losses is completely wasted.



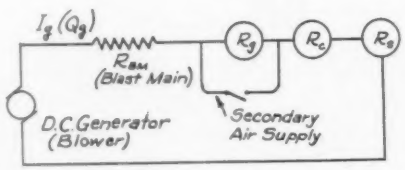


FIG. 2

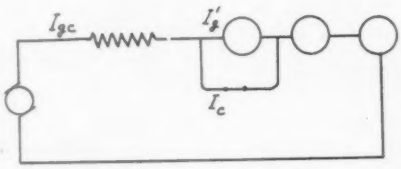


FIG. 2a

The first element to consider is the air velocity. If the volumes cannot be determined from a Venturi-meter, a very close check on velocity can easily be made with a Pitot tube. Excepting the very large sets, if the velocity is much over 4000 fpm it will be wise to check the difference in generator ash-pit pressure caused by the changes in blast main velocity and consequent increased friction drops. While these vary as the square of the volume flowing, most plants have short blast mains to offset this particular effect; there are a goodly number of installations, however, that have the blowers located quite distant from the gas machines. Some installations will be found to have velocities of from 7,000 to 9,000 fpm or higher. Unless the blast main is exceedingly short and straight, such plants are certain to have wide variations in pressure from this cause.

Piping Design

The next and most important element to consider is the loss caused by elbows and fittings. In a recent paper—"Increasing Water Gas Set Capacity" by B. P. Jenkins, May 22, 1946 — one of your members brought out the fact that air meters are "usually jammed in between fittings" so that accurate air measurements were impossible. Not only is that true, but, unless the air meter is properly designed and properly located in the piping, the excessive velocities leaving the meter and blasting into a short radius elbow will greatly increase the losses of air pressure. Explosion-heads are frequently located so that the air blows directly at the blanked surface. The air is supposed to obediently turn into a side outlet preceding the explosion-head, but actually it blasts down into the pocket made by the explosion-head, stops, fights its way back into the main flow and then proceeds down the side outlet. Where stand-by blowers have leads connecting to the blast main at 90° angles (and how common is this practice) the results are similar.

Where the air passes through an elbow at high velocity the main body of air is carried towards the outer edge of the pipe, greatly increasing the velocity, since only a fraction of the available pipe area is actually in use. After passing such an elbow, and the shorter the radius of the elbow the worse this condition will be, the air stream must expand to again fill the entire pipe and this entails more losses. Each of these actions is closely allied with high air velocity or with "shock". Therefore, in laying out the blast main the designer should be concerned with moderate velocities and an effort to avoid conditions contributory to air shock.

When modern central boilers began to require handling tremendous amounts of air and gas for forced and induced draft, designers found it necessary to drop the round ducts formerly used and to go into the refinements of scientifically designed rectangular ducts with "splitters" or turning vanes, for the design of which rigid rules have been laid down by several recognized authorities, to

avoid abrupt expansions; in short, to make every reasonable concession towards ideal duct design because of the improved performance and savings in fan power that would result. Similarly, as water gas machines become larger, the higher blasting rates warrant increased attention to the design of the blast main.

As an indication of how widespread the tendency has been towards overlooking this factor, we will cite a few examples. Firstly, in designing water gas blowers over the years, one manufacturer observed that customers had a tendency to use the size of the blower outlet flange to determine the size of the blast main. Since this seemed to explain the many small blast mains, he decided to make the outlet flanges large enough so that the use of this size would give a reasonably low velocity. No one has ever asked to have an even larger flange, but a disturbingly large percentage of customers request smaller flanges, sometimes reducing the area by as much as 30%. Again, a field engineer checked the static pressure drop through a ten-foot section of pipe that contained two sharp right-angle bands and an explosion-head, and found a loss of 12″ in this short section. By inserting a section with two long radius sweeps in place of the right-angle bends, the loss was reduced to 1″. Finally, in some plants the designer has tried to ease the effects of right-angle bends by breaking the inner corner into a short radius bend. This is, of course, a feeble effort in the right direction but the unhappy part of it is that most of these tees are actually installed with the bend on the wrong side of the turn. (Fig. 3).

Every gas man has seen arrangements of this nature in various plants. It is an unhappy circumstance that more efforts are not made to change these ducts, since inexpensive changes will in many cases make much more pressure (and volume) available for blowing the set and modern methods have demonstrated that the capacity of old sets can be greatly increased by stepping up the air blasting rates.

Governor Action

It is suggested that purchasers of large water gas blowers will do well

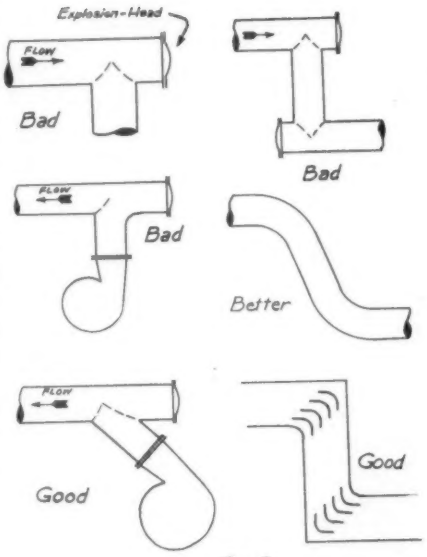


FIG. 3

to determine closely the exact governor action that they will obtain on the turbine. When loads are suddenly removed from a turbine, as by the quick closing of the carburetor or generator blast valves, the turbine tends to speed up as the governor struggles to maintain control of the machine. Since the pressure developed by the blower is in large dgree dependent upon its peripheral velocity, this sudden increase in speed causes an increase in blower pressure (as the square of the speed) and unless this factor is controlled the overspeed governor may even trip out under such conditions. To control this effect, not only should the turbine governor be of such design that it will be quickly responsive in checking speed increase due to loss of load, but experiments have been made towards the use of an orifice in the hydraulic control lines to slow the action of closing the blast valves. Reducing the suddenness of this value closing action will greatly facilitate obtaining close speed regulation on the turbine.

Blower Specifications

Purchasers of large water gas blowers would further benefit by issuing more complete specifications as to the exact duty cycle. In 99% of present-day negotiations, the only specifications are these:

a. Maximum volume
b. Pressure at maximum volume
c. Steam conditions.

Usually the maximum volume is greater than the customer ever expects to need; that is, it carries a margin for underestimating air requirements, possible leakages, and for possible future needs. If the specifications are limited to these figures, the turbine will, as a matter of practical engineering, be nozzled to provide its best water rate at maximum blower volume. Since the water rate will be increased at lesser volumes, and since the turbine will probably never be run at maximum volume, the machine will operate at reduced efficiency throughout its life. If, instead, the specifications listed the following:

a. Maximum volume
b. Normal generator air volume
c. Normal generator and carburetor air volume
d. Minimum pressure to be developed at any volume specified
e. Steam conditions.

the manufacturer could then intelligently nozzle the turbine to provide best economy under normal operating conditions, and overload hand valves could be properly sized to handle the difference between normal volume and maximum volume. In the past, when water gas blowers were smaller, and when manufacturing costs were not as stringent as in the present day, manufacturers frequently supplied an abundance of hand valves on water gas blower turbines to automatically offset the factors unmentioned in the specifications. That was helpful towards best economy but could not possibly result in having guessed the customer's requirements 100% of the time.

By giving more complete specifications, the engineer can then request more complete data on pressures and water rates together with estimated turbine governor regulation and these figures will tell far more about the performance of the proposed blower than will pages of catalogs and descriptions of materials.

It has been my purpose to present a few unbiased suggestions that may aid in a more thorough understanding of the problems involved in the proper application of large water gas blowers.

Presented at Operating Division Meeting, The New England Gas Association, Boston, January 29th, 1947.

Home Service Fits Into 1947 Sales Promotion

By

Wallace M. Chamberlain

Michigan Consolidated Gas Company
Grand Rapids, Michigan

Chairman—A.G.A. Residential Gas Section

THE SUBJECT assigned to me for this talk is entitled "Home Service Fits Into 1947 Sales Promotion." In itself this is hardly a startling piece of information. Home Service has fitted into our sales promotion programs for many years much as a key fits into a lock. That it will continue to fit into the Residential Section's promotional programs is axiomatic. All we must do is to check occasionally to make sure that we have the right key for the right lock so that we may open wide the door to more sales more smoothly. That is a matter of cooperation and cooperation is an art for which Home Service is noted.

Not long ago a rather pet slogan was being passed around within our industry. Among other places, I remember seeing it in A.G.A. headquarters a year or so ago and it read *"If it doesn't help to sell gas, forget it!"*

I think we of the Residential Gas Section might well adopt it for our motto as we go into this highly competitive post-war era, except that there might be danger in it if misinterpreted or misused. I would prefer to paraphrase it this way, putting it in positive terms, *"If it helps to sell gas, back it to the limit."*

To my way of thinking the original offers too many opportunities for the unimaginative or the too factual manager to prove that certain activities by their subtle or indirect place in the sales picture are not making the cash register ring, are costly and therefore should be curtailed or even abandoned.

I think that the second, on the other hand, if taken to heart, might cause any type of management to pause a long time before he uses the blue pencil on the budget sheet of any project that is assisting in turning those meter dials and to come out more enthusiastically in support of any program that has even remote sales possibilities.

Now I hope that you are in accord with me so far because I am sure you agree that there is no more important aid to the selling of gas than Home Service. Yet, if it is fulfilling its proper function, Home Service is certainly on the subtle side in its approach to direct sales. Most home service women would feel rather insulted if given a title bluntly indicative of sales and I would heartily agree with you in vehemently denying the wisdom of changing the title of Home Service Director to "Sales Catalyst" or of Home Service Representative to "Solicitors Aid" or of referring to you even affectionately as the "peddler's partner." Yet you are a great catalyst to any sales program, the finest aid to any solicitor and a very grand partner to any of us who may choose to crack about ourselves as being peddlers.

If my diagnosis is correct, Home Service has gone through two important eras and is now well into the third.

Inceptive Stage

In the initial stage the industry had to start somewhere. It was a big step for the old-line gas utility to install a Home Service Department in any form. We weren't entirely sure of what we wanted except that it was realized that a better contact with the women of the community was necessary and that it must be done in a high-caste, dignified manner in order to command Madame Customer's respect and to avoid an approach too obviously commercial. So we sought the schools and universities for personnel. We are still seeking them today and will be tomorrow. But the whole thing was new to our educational institutions also and too often in our early attempts to put home service on a high and proper plane we and the educational institutions shot into the stratosphere from which it became difficult to descend to the earth level and after all it is on the earth level that most people—and certainly most of our customers live. Too often the high plane became a pedestal which was out of reach of not only mortal man but, more important, the average woman. In other words, we are talking *down* to our people, which is the greatest of sins—at least for a public utility.

In the 1930's came the great depression and with it for the first time a full realization of the importance of sales and the fact that the wheels of industry do not turn—in fact "nothing happens until somebody sells something" and "Sales Mean Jobs" became the watchword. The salesman became the man of the hour and the star salesman the hero who often—and sometimes to his own bewilderment — was showered with honors the like of which were not always accorded a Congressional medal winner in this last world war. Prize money, banquets, parties, loving cups, gold and silver plaques, watches, trips to Bermuda, and a host of other awards were presented to the man who could sell.

A Sales Adjunct During Depression

This was good. It was time that salesmanship was given its place in the sun and that recognition was given to the fact that basic employment and the very economic system itself is dependent upon the movement of goods at the retail level and that the salesman is a prime factor in the accelerated movement of those goods. Of course there was nothing new about this. It was just a basic fact that became universally recognized and we became a bit hysterical about it. It was along about this time that Home Service entered its second era because we also became fully cognizant of the sales value of the Home Service Department and admonished same to get off the high-horses and get in there and pitch for appliance sales and earn the daily bread by the sweat of thy brow—or else! Stop spending the company's money on Lennox and Spode and Wedgewood for pink teas for socialites—get out of the laboratory and the test kitchen and get on the firing line with a sales demonstration that will knock the competition cock-eyed! Go commercial with a vengeance! So Home Service did—and in most cases magnificently. For

some the transition was a little too rough, but in general I think it was a welcome relief. Possibly we overdid it sometimes. Possibly we were a bit coarse in our methods. But it worked—and sales were made—and the cash register rang—and the industry forged ahead.

Nutrition Enters the Picture

Now we swing into the third era and it is in this one that I think Home Service really comes into her own. The adaptability and versatility of Home Service departments and Home Service people was proven beyond any shadow of a doubt during the war years when Nutrition Centers, war cookery classes, information bureaus, Red Cross training programs and a host of other activities were operated so efficiently and pleasantly that whole communities seemed to look to their Gas Companies for vital information, assistance and even recreation. In many cases the Gas Company was the hub of civilian defense work. Floor space, time and financial support were given voluntarily and without any ostensible commercial slant. By its very magnanimity it became the greatest instrument of good will and proper public relations any public utility could wish for. It is a blend of this spirit with that of the second era of frantic selling that will find home service at its very best in this new era of today and tomorrow. The very name is slogan enough—*home* and *service*—isn't that a gas company's primary reason for existence—*service*—and the best type of service to and in the *home*.

Because in this democracy of ours the customer is King and Mrs. Customer is Queen. He and she pay for the clothes we wear, the food we eat, the houses we live in, the cars we may drive and the fun we may have. Aren't they and their home entitled to the best service we can give them?

As a Sales Function

Now please don't misunderstand me. Not for a minute am I minimizing the importance of sales and sales demonstrations. Of course, sales are the important thing. Also note that I am not saying that the Sales Department is *the* important department. Everything is important as it leads to sales. Every function of each department and each employee is important as it and he lead to sales. Every department is equally important in the sales picture and every department is a part of sales whether conscious of it or not. And every department is a public relations department whether or not it comes in actual contact with the customer. Better production or manufacture, better distribution, better installation and pipefitting, better credit relations, expedited order transmittal, better stock keeping, better purchasing methods, better accounting, better telephone service, better meter repair, better billing methods, better book-keeping—all and everything has a direct bearing on better customer service and thus on our standing in the community and thus on peoples' desire to do business with us and thus on the sale of gas.

Home service is that important link with the customer that expresses to her or to him our sincere desire to be of service. Home service is the cement in our public relations program—the flour that is the mortar for our bread. As such it is one of the finest of sales instruments but always to be most effective it should keep the order pad itself just out of the customer's sight—in fact make Mrs. Customer fairly itch for a sight of it so that when your partner in arms, the salesman, places it in front of her she is anxious to see it, eager to see it, rather than scared, skeptical or on the defensive.

New Freedom Kitchen

The New Freedom Gas Kitchen program is such a natural for Home Service that you are taking it in stride. I am delighted that your Chairman this afternoon is talking on "The New Freedom Gas Kitchen, Pivot of Home Service Promotion." You have recognized it as one of the greatest selling tools ever developed by the gas industry. You have worked intelligently and enthusiastically with the New Freedom Gas Kitchen Bureau and the A.G.A. Committee in the development of the program. Kitchen planning bureaus have sprung up across the country and already 129 gas companies are thus serving over eleven million domestic customers or 56% of our total residential meters. More are coming every day. New ideas are developing by the minute. This is just one example of the type of work being done in this third era of home service and further proof that this new day is a great one.

Just let me sound one word of warning. It probably isn't necessary but I want it for the record anyway. I have outlined some of the history of Home Service as I see it by the three eras or phases mentioned. This new one combines the best in both of those previous to it. But please if ever there is a choice lean a little harder on the policy side of the second era—on the real selling side. You see it would be very easy in this astounding maze of activity to take the wrong tact—to over-emphasize one pet phase of the program at the expense of one more important. For instance, a director could become so fascinated with the theory of kitchen planning, work space, cabinets, ventilation, gadgets and what not that she would neglect to include the best type of gas range and gas refrigerator that the customer can afford in favor of a fancy set of—zilts—or knick-knacks.

The Contented Customer

If the customer doesn't want *any* work space or toe coves in her kitchen why should we argue too long about it—she is the one who lives in it and with it. If she lives graciously and happily through the use of a gas range built to CP standards and a silent gas refrigerator and an automatic gas fired water heater—what do we care if she is happy—and we are getting the business.

Of course it is our duty to point out and educate her in the best of all types of kitchen equipment, proper color schemes and decorations—then let her choose—but carefully, quietly, persistently see that she puts first things first, the cooking appliance, food preservation—and an abundant supply of instant hot water—with gas the perfect fuel—the magic flame that cooks as well as heats, and if her chosen color scheme is sky blue pink, let her glory in it.

If some of the equipment happens to use electricity—so what if it helps to sell gas. I am referring to automatic laundrys—dish washers—mixers—and the like, our allied lines which don't burn gas but assist in building the gas load. Whatever has to do with kitchens, let's have her think of the Gas Company and the gas appliance dealer as the authority.

Home Service is now fully of age. She is an adult member of the gas industry family and as such has her right to speak for herself. Her opinion should be sought. Her opinion is respected. Axiomatically with her adulthood, she has attained her full share of responsibility.

We look to her for glamor, for ideas, for resourcefulness. We expect her to present the better side of our character to our customers and prospective customers. And we look to her for doing a good share of the hard, gruelling work that is not at all spectacular but which is very necessary.

Phone calls, home calls, kitchen

planning, baking complaints, recipes, demonstrations, lectures, testing, developing, are all in the day's work. Countless questions from "How do you cook a possum," to "What temperature do I use for bathing a cocker-spaniel"—and always I know the customer gets an answer and a good one. Even if you occasionally have to improvise a bit I am sure that your answer at least reflects good judgment seasoned with common sense. To have a headquarters where one may find those two ingredients is a decided asset to any community.

A Key to Gas Promotion

"Home Service Fits Into 1947 Sales Promotion"—I should say she does, and she will be a key in the lock as the doors open on promotional programs in 1948 and 1950 and 1967. There will be many difficult problems to solve and tough competition to meet. Life would grow pretty dull if this were not true.

1947 finds us only part way on the road to recovery though it is now nearly two years since V-E Day. Reconversion may be nearly complete but production is far from the point necessary to meet consumer needs. From all prognostications and estimates by authorities to date, the shortage of steel and other materials will still hold gas appliance manufacture to 1946 rates of production for a major portion of this year. We may have appliances in quantity but hardly in adequate quantity. The sellers' market may be over—and thank heaven for that—but the buyers market can hardly begin until quality merchandise is produced in sufficient quantity to give the discriminating buyer a choice. These are facts that should not be discouraging but facts with which we must work. There is every reason to be encouraged and every reason to feel that 1947 will be a year of real progress. A recent article in a new year's publication wraps it up rather neatly:

> **"It would be foolish to minimize the difficulty of problems that lie ahead. Civilization has become dynamic to an extent never before known. There can be no such thing as absolute stability and it is vain to expect it. The only stability to be expected, in fact, is that of the gyroscope and the universe—the stability that comes from rapid motion. That kind of stability is the antithesis of stagnation."**

Operating Committees

In addition to the Manging Committee, there are twelve operating committees of the A.G.A. Residential Gas Section that are working with you. All of them are allied with you and affect you and your work as your work is interlaced with theirs. Just as each department of a gas company is important to the sales picture so are these committees important to you and you to them. Let me name them for you; Appliance Financing Committee, Dealer Relations Committee, Domestic Range Committee, Home Service Committee, Committee On Housing, House Heating and Air Conditioning Committee, Committee on Improving Domestic Gas Appliances, New Freedom Gas Kitchen Committee, Refrigeration Committee, Committee on Selection and Training of Sales Personnel, Water Heating Committee, and the Window and Store Display Committee. Just their names without mention of their scope, and objectives indicate their function. It is a great team. From all of them I am sure you would get the same response as from your management! *"If it helps to sell gas, we will back it to the limit."*

Presented at Home Service Workshop, American Gas Association, Cincinnati, Ohio, January 20-23, 1947.

Gas Makes Possible Special Printing Process

A unique yet essential application of gas heat is used by the Relief Printing Corporation, Boston, Mass., for the printing process in which they specialize. This relief process produces a raised or relief printed surface which very closely resembles printing from engraved steel and copper plates or intaglio printing.

The particular specialty of this company is business cards, which they print for many nationally known concerns, letter heads, bill heads, invitations, and greeting cards. The printing is done in the conventional manner on high speed automatic flat bed presses. There the ordinary printing process stops and the specialized relief process starts. From the discharge end of the presses, the pieces which have been printed in a special ink, are picked up on a metal chain conveyor belt adjusted to the production speed of the press. The printed pieces on the conveyor first pass under an automatic hopper from which a special powder is sprinkled on the surface of the printed piece from the press. Next a suction device removes all the powder except that which has adhered to the wet ink and returns it to the hopper. The printed pieces with the powder on the wet ink then pass under a gas-fired burner. This burner is composed of 75 miniature tunnel burners which fire downward through a ceramic plate into a shallow

rectangular box or pan which becomes highly radiant in operation. The perforated bottom surface of this box, operating at about 1600°F. radiates heat directly to the printed material on the conveyor about six inches beneath it. In the three seconds it takes the printed pieces to pass under the gas burner, a chemical change takes place in the ink and powder which forms a permanent raised surface of the printed image. The resulting surface can he had in either dull or glossy finish depending on the type of ink used. A short run of the conveyor takes the printed pieces through a current of air where they are cooled and then stacked thoroughly dry at the discharge end.

As this relief process can be accomplished with the same speed as press production due to the efficient application of gas heat, there is no loss of time, and of production results equal that of any other job printing shop in time, but with far superior printing.

Gas Range Sales Show Marked Increase

The gas industry gained 7,100,000 cooking customers from 1935 to 1947 despite war-time restrictions which prevailed for five of the eleven years of this period, according to the Gas Appliance Manufacturers Association. This is a 45 per cent increase over the 15,752,000 homes which cooked with gas in 1935 and brings to 22,900,000 the number of homes in the United States using gas ranges.

During the same eleven-year period, 2,800,000 additional families purchased electric ranges and brought the total number of electric cooking customers to 4,000,000.

Better than 90 per cent of all homes on piped gas lines use gas for cooking, and 62 per cent of all homes in the United States cook with either piped or with L-P (bottled) gas.

Rural L-P gas cooking customers total 3,500,000 and have increased more than 600 per cent since 1935. The number of electric range installations in rural territories totals 1,785,000.

Thousands of housewives are waiting to buy new, modern gas ranges. They have the desire, and the means, to buy the *best*. Our consumer advertising program is telling these women that ranges equipped with the Harper Center Simmer Burner are definitely superior... that the Harper "2 burners in 1" top burner saves up to 39% on gas, keeps kitchens up to 9 degrees cooler, saves hours of kitchen pot-watching weekly, and makes possible many other advantages symbolized by the Harper seal.

You can *demonstrate* these advantages to your customers. There is no surer way to close sales on higher-priced ranges . . . to augment the position of gas as the ideal cooking fuel through promoting appliance improvements that give better cooking results. Scores of helpful pointers on how to demonstrate effectively are contained in our booklet "How to Sell More Gas Ranges." Copies are available for your staff—FREE. Simply address: Harper-Wyman Company, 8561 Vincennes Avenue, Chicago 20, Illinois.

NOW...we're telling your Customers-

about the new, improved

HARPER

CENTER SIMMER BURNERS

...in leading magazines

Before Buying Your
NEW RANGE
...make sure it has the famous
HARPER CENTER SIMMER BURNERS
look inside for the booklet with this seal
The Harper Center Simmer Burners are superior to ordinary top burners because each Harper burner is really 2 burners in 1. As shown in diagram, the big outer burner brings foods to a quick boil. Turn handle until it "clicks" and the big burner goes out, leaving only the small, efficient inner burner lit to finish the cooking.
Only the separate Harper Center Simmer gives you the controlled low heats you need to keep foods warm for serving...to eliminate pot watching and boiling dry...to allow cooking with little water, which saves time and gas and keeps the average kitchen 9 degrees cooler. Only the Harper separate Center Simmer can help you so much in your cooking.
Insist on Harper Burners!
•18 Leading Gas Ranges are Harper Equipped
2 BURNERS IN 1
BOTH BURNERS ON
OUTER BURNER TURNS OFF
INNER BURNER STAYS LIT
HARPER-WYMAN COMPANY, CHICAGO 20

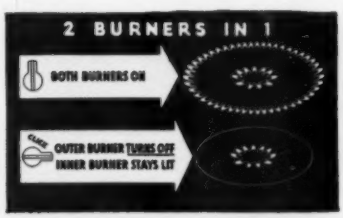
OVER 21,500,000 READERS!

Advertisements like the one shown here appear in the following publications, having a combined monthly readership of more than 21,500,000 women:

Ladies' Home Journal
McCall's
American Home
Better Homes & Gardens
Woman's Home Companion

Tie-in with this consumer advertising... *demonstrate* and talk the advantages of the Harper Center Simmer Burner when these women come in to *buy!*

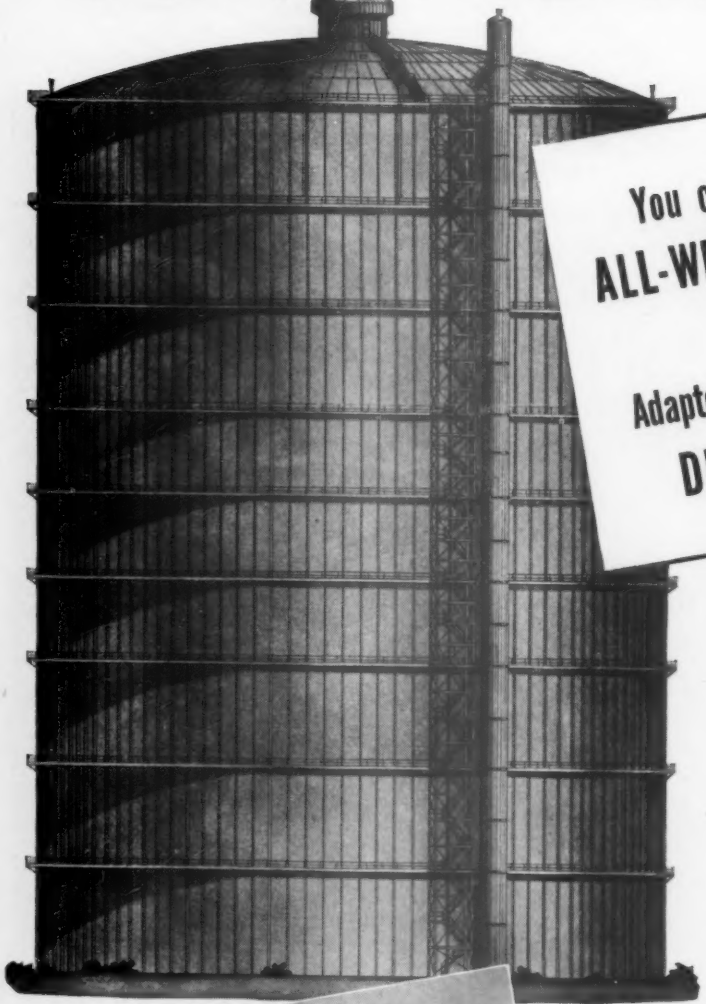
The Harper Center Simmer Burner operates on the unique principle of "2 burners in 1"...a STARTING BURNER for frying and to start foods boiling, plus a small, economical COOKING BURNER, to maintain the cooking...both controlled by the same handle. It is subject to finer gradations of low heats—greater control and economy—than any other top burner made.



HARPER CENTER SIMMER BURNER ***"...Holds the Lines for Gas"***

HARPER CENTER SIMMER

FOR THE FIRST TIME



You can have the advantages of ALL-WELDED VERTICAL PANEL CONSTRUCTION Adapted to the Famous Stacey-Klonne DRY SEAL GAS HOLDER!

You'll save on first cost—you'll save on operation, too.

Gone are the days of winter operation worries—no more temperature readings—no more freeze-ups—no more anchor ice problems—because NO LIQUIDS of any kind are used as a sealing medium in the Stacey-Klonne dry seal holder. Gone are costly service shut-downs for corrosion. What's more, you'll get greater capacity per square foot of ground space; and foundations are simpler, more economical.

To these we've added the advantages of vertical all-welded panel design—another Stacey Brothers "first". Its patented features enable us to build holders free of unsightly buckles and deformations—and give longer life.

Now we are able to offer you these two Stacey Brothers innovations in one great new holder, the last word in money-saving, trouble-free storage capacity. This is an exclusive development, *not available through any other company*. It will pay you to get full details from us at once.

STACEY BROTHERS GAS CONSTRUCTION CO.
One of the Dresser Industries
5535 VINE STREET • CINCINNATI 16, OHIO

Stacey Brothers
ALL-WELDED GAS HOLDERS

◀ **World's Largest All-Welded Dry Seal Holder—a 10,000,000 cu. ft. Stacey Brothers installation, soon to be dwarfed by even larger all-welded vertical panel Stacey-Klonne Dry Seal Holder.**

High Pressure Welded Steel Pipe

Method of Fabrication for Southern California Gas Line

By

Fred A. Herr

PROCESSES in the fabrication of high-pressure gas transmission line new to the West Coast, which are employed in the manufacture of the pipe for the 30-inch, 214-mile-long natural gas line being constructed by Southern California and Southern Counties Gas Companies of Los Angeles between the Colorado River and Santa Fe Springs, near Los Angeles, were described for a group composed of executives of the gas firms and public officials of Los Angeles and other communities which will be served by the line, who were guests of the Consolidated Steel Corporation on a plant inspection tour in February.

Two presentations of the pipeline project were given. Charles W. Crawford, vice president of the steel company, described the processes and machinery being used in fabricating the pipe sections for the transmission line. B. M. Laulhere, manager of the engineering services, Southern California Gas Company, then outlined for the benefit of the inspection party which visited the Maywood, Calif. plant of the steel company, the techniques of pipe line construction which had been decided upon in laying the line, among which are some methods not hitherto employed in gas pipeline laying.

New Pipe Production Machinery

Mr. Crawford explained that the 30-inch pipe for the Blythe-Santa Fe Springs project is being fabricated in a newly installed production line in the Maywood plant of the company at a production rate which in February had attained an output of nine miles per week, or about one 30-foot section every 4½ minutes. This production schedule, he declared, is geared to keep the finished pipe rolling out of the steel plant uninterruptedly to supply the H. C. Price Construction Company of Los Angeles and Bartlesville, Okla., which on February 3 began the actual construction on the pipeline.

Pipe Fabrication Described

The pipe, which is of the so-called "high test" type, according to Mr. Crawford has a minimum yield strength of 52,000 psi and is the largest diameter pipe of this quality yet produced. The process of fabricating it, he declared, is new to the West Coast in that the process embodies continuous welding of the longitudinal seams and hydraulic expansion of the welded pipe sections.

Some of the steps involved in producing and processing the pipe from flat steel plates to finished pipe sections, ready to be hauled in padded cradles in trucks and trailers to the pipeline right-of-way, are illustrated in the accompanying photographs and were described by Mr. Crawford as follows:

In the initial operation plates of special manganese steel approximately 92 inches wide and 30 feet long are passed on a conveyor through leveling rolls (Fig. 1), which remove any waves or buckles. A shear then trims the ends square and to proper length, after which the plates move past grit-blasters, where mill

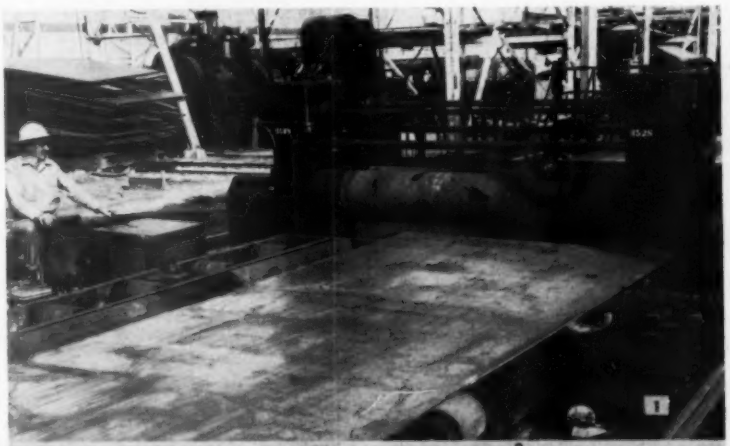


Fig. 1 . . . Sheet of manganese steel, 30 feet long by 7 ft., 8 in. wide, is shown here on conveyor being shunted toward the rolls of a leveling machine in which waves or buckles are removed.

Fig. 2 . . . This shows the planer used by Consolidated Steel Corp. in its Maywood, Calif., plant with which the steel sheets are trimmed to blueprint specifications, squared precisely and edges processed for welding.

scale from the edges to be welded is removed.

In the next operation the steel plates move into a planer (Fig. 2), where they are reduced to exact width and squareness and the edges are processed for welding.

For the next process the plates are moved to edge rolls in which the two edges are formed to the proper radius, and then are conveyed to the pyramid roll machines (Fig. 3), in which the 30 inch plates are rolled into cylindrical shape.

Submerged Arc Welding Used

Upon leaving the rolls, the cylinders, now formed to the rough proportions of their ultimate shape, are fed end-to-end through seam welders in which the two edges are aligned and welded by the submerged arc process.

"In this process," Mr. Crawford declared, "the edges are progressively fused together by means of heat generated by the passage of a heavy electric current between a bare welding electrode and the plate. The electrode is not in actual contact with the work, but the current is carried across the gap through a granular material, or "melt," which is laid along the seam just ahead of the electrode and in which the end of the electrode is submerged. The entire welding action takes place beneath the granular material without visible evidence, such as flash, sparks or spatter."

According to the Consolidated Steel Corporation executive, the weld obtained by this process is smooth in appearance, completely penetrates the plate, and possesses greater strength than the parent plate.

The cylinders at his point of the production schedule are somewhat smaller in diameter than the finished dimensions of 30 inches. In the subsequent operation the ends of the cylinders are mechanically stretched in end-expanders to 30 inch diameter, after which they are rolled into a hydraulic expander.

Hydraulic Expansion Method

"In the hydraulic expanding machine," Mr. Crawford said, "the pipe section, which is 30 inches in diameter only at its ends, is placed between movable heads and surrounded by a cylindrical die of 30-inch inside diameter. The pipe section is filled with water, and sufficient hydraulic pressure is applied to stretch the pipe until it contacts the die, which restrains it from further stretching."

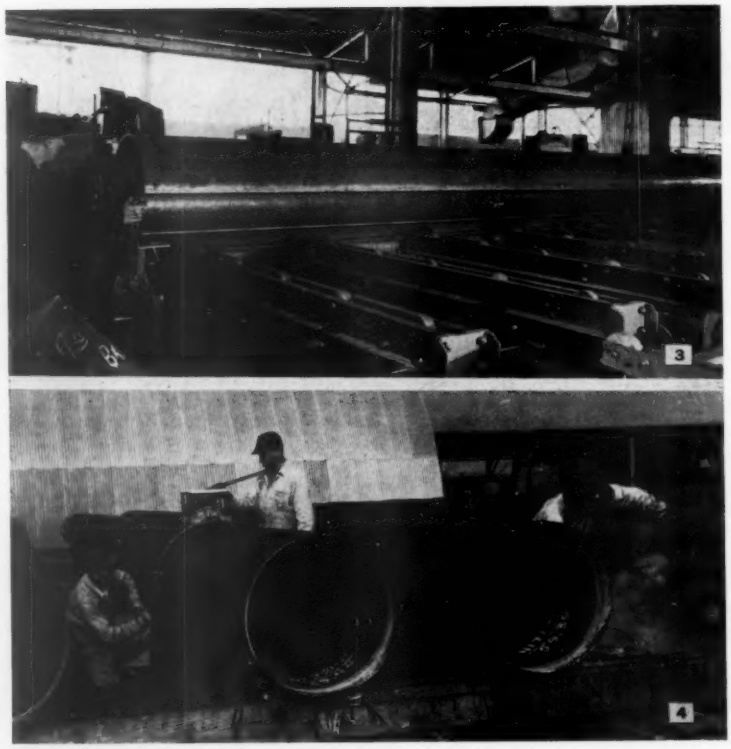


Fig. 3 . . . The flat steel plate here is shown taking shape as pipe. This machine rolls the flat plates into cylindrical form.

Fig. 4 . . . In the final operation the 30-inch high-pressure pipe is prime coated with coal tar, wrapped with asbestos felt, and given its final checking with a holiday detector, the apparatus on top of pipe section.

Mr. Crawford set forth the purposes of the expansion operation as being

1) The stretching or "cold working" of the steel materially increases its yield strength, thus permitting the use of thinner wall pipe for a given pressure, with corresponding saving of weight.

2) The expansion of the pipe into the truly cylindrical die results in uniform roundness and straightness of the pipe.

3) The stretching of the pipe fully tests the strength of the welded seam at the yield strength of the parent plate.

Weld is Hammer Tested

The internal pressure is reduced after the casing has been expanded, Mr. Crawford declared, the die is removed, and the weld is then hammer tested and examined for leaks. He pointed out that the expansion process results in shortening the 30-foot sections by several inches.

In the next operation the pipes are moved from the expander to an end facing machine in which the ends are squared and beveled for welding. The welding is done in circumferential welders with which two 30-foot sections of pipe are welded together into one 60-foot shipping section. This circumferential seam is also made by the submerged arc process previously described.

The final operations are conducted in the yards adjacent to the Consolidated Steel Corporation's factory. These operations include brush cleaning the interior of the pipe with cylindrical, mechanically operated brushes, blasting, prime coating with coal tar and wrapping with asbestos felt. The final checking is done with a holiday detector (Fig. 4).

Pipe Laying Started Feb. 3

At the conclusion of Mr. Crawford's description of the pipe fabrication process, Mr. Laulhere discussed the pipe laying phase of the project and cited some of the techniques that had been decided upon for the construction of the 214-mile

(Continued on page 54)

Industrial Management Looks Ahead

By
Louis Ruthenburg
President, Servel, Inc.
Evansville, Ind.

THAT the people of the United States have achieved the world's highest and most widely distributed material living standard will be accepted by this audience as a statement of obvious fact. Almost equally obvious is the fact that our high material living standard is the direct reflection of a degree of productive efficiency not heretofore or elsewhere attained.

These conditions are not accidental. Neither are they traceable solely to our wealth of natural resources or to unassisted providence. A well-defined evolutionary pattern is clearly apparent as we examine the philosophy upon which the republic was founded and as we review the industrial history of the United States, which grew out of that philosophical background.

The republic developed from a philosophy which contemplated maximum individual freedom from restrictive influences. The environment and incentive which were engendered and maintained under that freedom brought about the most highly productive cooperation among the various elements in our social and economic structure. An ingenious, energetic, free people developed a remarkable but essentially simple economic formula, under which productive efficiency increased with great rapidity.

The following summary, which covers a 90-year period, is interesting and significant:

Year	*Investment Per Plant*	*Investment Per Worker*	*Horsepower Per Worker*	*Annual Wages Per Worker*
1849	$4,000	$500	Very little	$248
1879	10,000	1,000	1.3	346
1909	70,000	3,000	2.9	510
1939	270,000	6,000	6.4	1,150*

** While annual wages increased more than 4½ times, hours worked per week were reduced about 40%.*

American inventive genius, untrammeled and stimulated by compelling incentives, developed an ever-increasing wealth of new and desirable products and constantly improved techniques of production. The limited physical power of human beings was augmented and multiplied by mechanical power. Surpluses, or profits, made possible greatly increased investments in the tools and facilities of production. Management combined these tools and facilities with effectively organized and supervised groups of men and women to attain maximum effectiveness in production.

Changing Trend

Many economic trends which we had come to regard as normal were interrupted by the depression which began in 1929 and by World War II. Vast political, social, economic, scientific and technological changes have taken place during the confused years that followed 1929. Complex interrelationships among these forces must be taken into account and haphazard political policies have raised new obstacles, — obstacles which seem likely to prevent consistently improved productivity in the future.

Increased productivity results from cooperative action of innovators, investors, technicians, consumers, workers and management. Each responds to certain incentives. Each fails to cooperate in the absence of such incentives. In this republic each has the right and power to promote or obstruct the processes through which improved productivity may be attained.

The time at my disposal does not permit discussion of changes that have taken place in the status of the several groups. My comments are limited, therefore, to certain management-worker relationships.

Technological improvement of processing is an obvious and important element in increasing productivity, as is the steady increase in tools and machinery. But neither can be fully effective without the voluntary cooperation of workers.

In certain areas of activity, productivity has for many years been restricted by lack of worker cooperation. For example, the limitations which have been placed upon output by the building trades and by "featherbedding" practices of railway workers are quite generally understood. It is an unfortunate fact that similar restrictive practices during recent years have spread over greatly increased areas of the American economy. Thus, the motor car industry, which for many years has established new high standards of productive efficiency through continuous innovation and greatly increased investment in improved facilities of production, now suffers under the blight of reduced productive effort on the part of labor. Most of you probably are familiar with the statement of Henry Ford II that productivity of labor in the Ford plants had declined 34 per cent since 1941.

A few labor leaders are aware that the ultimate welfare of their constituents is dependent upon increased productive efficiency, but so far the effects of their exhortations have been negligible. None the less, the emphasis that men like Dubinsky, Green, Lewis and Murray have placed upon the importance of productivity is distinctly encouraging. Labor leaders and management face the joint responsibility of carrying forward a great, sustained educational effort which will convince all Americans that we can divide only what we produce; that the welfare of workers, consumers and investors alike is dependent upon increased productive efficiency; and that the living standard must inevitably decline in consequence of reduced productive efficiency. All of us must learn to distinguish clearly between

the meaningless money wage and the truly significant real wage, which takes into account the amount of goods that the money wage will buy.

Increased Mechanization

Among the compelling pressures that now stimulate management to increased mechanization and technological improvement in the processes of production, are fantastic increases in money wages, the abandonment or reduced effectiveness of incentive wages, the intransigence of many labor groups and an abundant supply of cheap money. Process engineers, tool designers, and tool makers, are now and will be in demand as never before. Invention and innovation will be at a premium without precedent.

The files of American industry already contain many plans and specifications for improved processing. Many of these were not economically feasible in the prewar years because the resulting savings, calculated in terms of reduced productive labor costs, were not sufficient to justify the investment. As between 1939 and July, 1946, average industrial hourly wage rates have increased more than 72 per cent,* while output per man hour in many industries has decreased. When both wage increases and decline of productive efficiency are taken into account, many investments in labor-saving equipment which were unattractive in the prewar period, now assume very inviting aspects, notwithstanding increased equipment costs. The availability of money at low cost tends to offset increased capital requirements.

In 1939 we used 6.4 horse power per worker, thereby placing at the average workman's disposal more than 50 times the power of his own muscles. If we assume that average industrial wages are one dollar per man-hour in the country, today's cost of mechanical horse power is in the order of 1/800 of the cost of human muscle-power. Industry buys mechanical power at rates substantially less than one cent per horse power hour, and one man's muscle-power is equivalent to ⅛ horse power.

Man's muscular power is so costly, that, even were Chinese coolie wages involved, we could not afford its purchase. We need man's directive ability to control the use of maximum mechanical power to the end that his productivity and real wages may continue to rise.

Again the voice of the technocrat will be heard in the land, and we must face the fact that definite hazards are involved in greatly accelerated mechanization of industrial processers. Dislocations, maladjustment and unemployment may develop, raising new problems in labor, social and political relationships. The already apparent trend toward concentration of capital and industrial operations may be greatly accelerated at the expense of small business.

Recent increases in money wages and the pervasiveness of restrictive labor practices, together with deliberate discouragement of profits, are abnormal phenomena which will have abnormal repercussions. We cannot eat more than we produce. We cannot reduce the planting of seed corn and still have larger harvests to eat.

Scarcity of Skill

As we consider the demand that is being placed upon our technicians and skilled workers to improve production processes, it should be noted that the scarcity of skilled craftsmen presents an extremely serious problem. The Apprentice-Training service of the Department of Labor estimates that there are only 200,000 apprentices now in training (half of them in the building trade). An authoritative estimate indicates that, in order to maintain *the 1940 level* of 5,400,000 skilled craftsmen, 619,000 apprentices must be kept in training continuously year after year. Few apprentices have entered training during the depression and war years. High wages levels, insistent demand for unskilled workers and reduced differentials between the earnings of unskilled workers and of those in the skilled trades tend to eliminate incentives for learning trade skills. In July 1946 average hourly earnings of all male production workers in twenty-five manufacturing industries were $1.264 per hour whereas skilled workers and semiskilled workers earned $1.327.† An increase in the order of 4½ per cent is not a compelling incentive for entering apprentice training.

If this very difficult problem is not quickly solved, disastrous results may be expected. It should have the immediate, effective attention of the most capable men in all branches of industry.

Management a Trusteeship

The technical and economic aspects of productivity and manufacturing methods, vitally important as they are, must, in the final analysis, be recognized as resultants of human equations. I have said that man's mere muscular power is so costly that we cannot afford its purchase. But for his brain-power and heart-power and cooperative effort, price ceilings do not exist. Thoughtful management will concentrate increasing attention upon the art of dealing constructively with the several human groups and individuals whose interests it must serve if satisfactory productivity is to be achieved and maintained.

Modern business management is a trusteeship. It holds in trust the interests of three principal groups—consumers, employees and investors.

Failure to serve the interests of any one of these groups will result finally in injury to the others.

A very delicate balance is involved among these interests. Disturbance of that balance may endanger the entire economic structure. As Dr. Leo Wolman has said, "In this country we operate on an economic system that is a complex, sensative and subtle system. It isn't easy to destroy, luckily, but it's easy to throw it out of gear. It's easy to impair its operations by a variety of means."

Each of the three groups—consumers, employees and investors—has the power to disturb the balance and to injure itself and its associated groups.

Now let's take a quick look at each of these groups in turn.

The consumer is the ultimate authority. His money, exchanged for the products and services offered by business, supplies the means of meeting payrolls, purchasing materials, meeting all expense and earning profits (if any).

The consumer demands sound values according to *his own standards of value*. Values are a composite of quality, in the inclusive sense, and price. If quality does not appeal or price is too high, *according to the consumer's own personal standards*, he declines to buy. Failure of the consumer to buy can deprive employees of their jobs and can cause investors to lose, not only a reasonable return upon investments, but invested principal as well.

Moreover, every one of us is a consumer from the time of our birth until the day of our death. So long as we live under the Constitution of the United States no pressure group can prevail against consumers' ultimate interests because the *whole* always must be greater than any of its *parts*.

The consumer is the ultimate boss.

Since workers are also consumers, they live by working for each other.

Employees are more vulnerable than consumers and investors. The failure of a business may deprive the consumer of its products, but the

* *Preliminary Estimate for July, 1946.—U. S. Bureau of Labor Statistics.*

† *National Industrial Conference Board.*

consumer can find substitutes that will meet his needs.

Failure of a business will deprive investors of income and such capital as they have invested. But investors may have other sources of income. Employees, however, lose their jobs when business fails. Loss of jobs means stoppage of income, and great distress may develop before the employee is re-employed, adjusted to new employment, and again the recipient of satisfactory and stable income. Since the worker is also a consumer, the loss of his job will affect other workers through his inability to buy their products or services.

The employee rightfully demands the highest real wage consistent with steady employment and the value of the service he renders. He knows that total annual income is much more important than the hourly rate, because his total annual income determines his real wages, and wage rates mean nothing until hours of actual work turn them into annual income. He wants good supervision, pleasant working conditions, and recognition as a human being who amounts to something in the enterprise. However, if, under misguided leadership, he demands a wage that results in prices too high for consumer acceptance or that results in depriving investors of proper safeguards to their investment or of a satisfactory return thereon, he disturbs the balance and may deprive himself of employment.

Modern management strives diligently to pay employees the highest wage consistent with the requirements of labor's boss, the consumer, and labor's partner, the investor.

The investor eats at the last table. After all wages and salaries have been paid; after all bills for materials have been paid; after all taxes and other expenses have been taken into account, the investor may receive some return upon his investment if anything remains.

The investor requires two things to induce him to risk his money to purchase the tools of enterprise. These are (1) safety of his investment, and (2) a reasonable return upon his investment. If either of these reasonable requirements are not to be had, he is naturally unwilling to invest, and that decision deprives the worker of tools and the consumer of goods and services. The result is reduced employment and lowered standards of living.

During recent years organized labor has occupied the limelight and built up its power, at the expense of consumers and investors. For that reason many of us have forgotten that the right and power to exert economic pressure by refusing to cooperate does not belong exclusively to labor.

The economic machine can be stalled just as effectively by labor's boss—the consumer—as by labor. Have we forgotten the "buyers' strike" of 1920, when thousands of Americans wore overalls to emphasize their unwillingness to pay inflated prices? Does no one remember the serious unemployment that followed our postwar inflation only 26 years ago?

Labor's partner — the investor — has the same right and power to strike and thereby to impede economic progress.

Business enterprises caught between the upper millstone of suppressed prices and the lower millstone of rising costs cannot long continue to retain the support of investors, and when adequate financial support is withdrawn management can no longer contribute to the consumer's need for goods and services nor furnish the pay envelope of employees. Management must see to it that each of the groups, consumers, employees and investors, does its fair share in production and is fairly compensated for services performed.

There, simply summarized, are the obligations of modern management and the implications that are involved in those responsibilities with respect to consumers, labor and investors.

For Better Understanding

Now let's examine some of the things that management may do in order to meet labor's pressing demands without endangering the stability of the business nor betraying the trust of consumers or investors.

Many years ago H. G. Wells characterized civilization as a "race between education and catastrophe." Since those words were written, economic and social complexities have developed so rapidly that the need for mutual understanding and particularly for understanding on the part of management of the viewpoints of consumers, labor, investors and all of the other groups in our complex social structure is greater than ever before.

Management itself must achieve understanding of many things that were not dreamed of in its philosophy a few short years ago. The scene changes so rapidly that we must "run like hell to stay where we are."

Then management must transmit its understanding and philosophy clearly and convincingly to those groups for which it acts in trusteeship, so that the basis of their relationship may be understood and cooperation made effective.

Constructive management always will be conscious of its responsibility to put and keep its own house in order.

Modern management is of itself a complex structure. Understanding within a modern industrial organization cannot be achieved until effective and unobstructed channels and media of communication are established and maintained among all elements of the managerial structure—from top management down through the ranks of those responsible for such functions as personnel administration, engineering, production, accounting and sales, to every last subordinate in line and staff positions.

Having established such open and effective channels of communication among the elements of management, equally effective means must be found for continuous and harmonious communication with the working forces which perform the functions of the business.

Moreover, these channels must be two-way passages" because management which is not constantly sensitive to and informed of the changing needs and attitudes of men and women who work at machines and desks and on assembly lines cannot function effectively.

This necessary two-way flow of understanding between management and the people on the payroll cannot be accomplished in the absence of modern and enlightened foremanship. The foreman must represent and interpret each to the other. Since the days of primitive industry, before the coming of scientific management and the more recent ascendency of labor unions, the requirements imposed upon our foremen have expanded prodigiously, and the kind of foremanship that represents a hangover from the primitive industrial era is wholly inadequate to cope with modern conditions.

In the absence of modern methods of foreman development, management cannot hope to meet its responsibilities to the people on industry's payrolls, or safeguard the interests of consumers and investors.

Quite obviously, the area in which management is free to manage has been notably restricted, and management will be less free to manage in the future in the degree to which it is affected by growing union influence and increased government control. It is, therefore, urgently incum-

(Continued on page 54)

Deal in the Dealer

By
B. A. Seiple
President, Jersey Central Appliance Co.

B. A. Seiple

DEALER Cooperation Programs by Utility Companies are as many and varied as individuals' thinking would permit. Speeches have been made and thousands of articles written on this subject both for and against *Utility—Dealer Cooperation.*

Having spent some 28 years in the Utility business and now 18 months as a Dealer, this *Dealer Cooperation* subject has a much broader significance to me. What motivates the Utility Company in establishing a Dealer Cooperation Program? All other factors are overshadowed by the number one reason—"To *build* profitable load and to hold this load against all competitive threats." The Dealer, too, must acknowledge a value in the Program. The prime requisite to him is—"To sell more products at more profit"!—which brings us to to the realization that "Cooperation" really is only an enlightened form of selfishness. Starting with that premise, let us explore some of the issues that might tend to make one plan more successful than some other plan.

What should the Utility expect of the Dealer? The Dealer must be thoroughly indoctrinated in the requirements on installation and service of all appliances, and told *why* the Utility has these requirements. Mr. Dealer and his organization must have a comprehensive knowledge of rates and how to relate them to the cost of operation of appliances he is selling. Your Dealer should properly display all products and make good demonstrations, so that the product itself and the fuel both have a good chance to show to advantage. Service of all products he sells should be a paramount requirement. Failure to render service after selling a good appliance, using a perfect fuel, has a threefold result—it destroys the consumers' confidence in the Dealer—the Appliance—and the Fuel. The Dealer should sell *aggressively* the appliances the Utility wants specifically promoted. To illustrate, a dealer once called the Gas Company for an automatic gas water heater, and, in demanding prompt delivery service, stated that he had tried to get his customer to take two competitive fuel appliances but that the customer had insisted on gas—A cooperative Dealer? Yes!

A Dealer should have sound financial backing, good business management and an ever present knowledge of the relationship of Sales and Net Profits. Only Dealers fulfilling these requirements will answer the Dealer part of a "Dealer Cooperation Program."

Now let us review the Utility's responsibilities. First—Dealer requirements should be raised. Just a shingle out front and an occasional sale of a gas or electric appliance should not alone qualify anyone as a Dealer. Most Dealer Cooperation Plans I have seen are developed adhering to that age old Utility bugaboo—"Non Discrimination." Dealers do *not* all fit into the same category and what may be a sound program for one type of Dealer is beyond the understanding of another group. A Dealer Cooperation Program that qualifies Dealers only by X square feet of showroom space, or an emblem prominently displayed, or requiring this or that quantity of sales force does not encourage the aggressive, hard hitting, selling Dealer, but rather tends to play down his biggest value to the Utility.

What the Dealer Needs

The Dealer Cooperation Program that will accomplish the maximum results must be flexible, and should be designed to fit each dealer into his proper niche. Constructively analyze *each* dealer's needs. Start with the premise that the dealer must be shown that your Dealer Cooperation plan is tailor-made for him, whether he be a plumber or electrician who started in business with little more than a desire to be on his *own*—or—whether he is a merchant who has always sold customer accepted products and considers anything under a 100% markup unprofitable —or—whether he is a specialty selling organization with trained field sales personnel who can sell with equal ability either the products you want him to sell or some competitive product.

The Utility, since it offers certain definite benefits and helps, has the responsibility of using the utmost discretion in selecting Cooperating Dealers. Including every dealer in the program regardless of his ability or desire to contribute to the whole is manifestly unsound, and would only contribute to an ultimate breakdown of the entire Program. In the January issue of "Electrical Dealer," some very pertinent figures were given, indicating that in 1929 there were approximately 9,000 appliance dealers, and that in the next ten years 56.63% of those dealers went out of business. In that same ten years, however, 6,000 new outlets were opened. Today, Commerce Deparment officials estimate there are about 21,000 appliance stores. What will the mortality rate be in Appliance Dealers in the next five years? The Utility, operating a sound Dealer Cooperation plan with carefully preselected Dealers, has a large stake in this picture.

Earlier I spoke of the Dealers' need to be willing to understand installation requirements, rates, and to properly service all appliances he sells. This likewise is a responsibility of the Utility Company to make available to the Dealer facilities for instruction in proper installation techniques, the proper application of rates and translating the rates into cost of operation figures that will be standardized among all dealers. Misinformation of operation costs on appliances given by a dealer have a very direct reflection in the Consumers attitude toward the Utility Company, and has a real bearing not only on building load but holding it.

Service schools are a must in the Successful Dealer Cooperation Program. With appliances becoming almost 100% automatic, proper adjustments must be made to give the consumer the type and character of service of which the appliance and the fuel combined are capable.

The Utility should provide a consistent broad program of advertising, display, and promotion. Since the

appliances provide the end use of Utility service, all advertising should feature the value to the consumer of modern appliances, and, for example, stress the health angle in automatic hot water service, the convenience angle in modern cookery, the labor saving angle in modern home laundry equipment. The Utility should make available to its Dealers a research laboratory where new appliances can be thoroughly pre-tested and a complete and impartial approval or disapproval be made. This feature calls for forthright, courageous action by the Utility; but in so doing it strengthens its Dealer activity and provides the Dealer with a degree of assurance that products, so tested and approved, will not cause customer dissatisfaction to such an extent as to ultimately force a dealer to take losses on those products.

Effective Cooperation

What does the Dealer look for in a Utility Cooperation Plan—This is the most difficult phase of the entire discussion; however, from a cross section view of many of the dealers I have asked this question came a ready response. "Make it possible for me to sell more appliances and make more profit." Sounds simple enough but there is much more to it than appears on the surface. To sell more appliances requires a full analysis of what lines the dealer now carries; how to augment his present lines without detracting from the sales effort in those present lines. During the war period when major household appliances were difficult if not impossible to get, many dealers, in order to stay in business, turned to other products either related or, in many instances, completely unrelated. They found they could sell them then and realize a good margin of profit. Can you now woo them back to sell gas and electric consuming appliances? The only way this can be accomplished is by showing them a sound market and a brand of sales assistance they never knew before. Many utility companies in the past centered their Dealer Cooperation plan around what was called a "Subsidy." There are subsidies and subsidies. A lot depends on how it is set up. If it gives the dealer something for nothing, it is the most disastrous form of subsidy and for most dealers—not wanted. This form of Dealer Cooperation has caused more dealers to die of dry rot than any other single thing. Strong dealers scorn such "Cooperation" and weak dealers cling to the hope that *it* will keep them going when their other efforts fail.

Basically, a good strong dealer wants nothing for nothing. He wants only a realization from the Utility that certain appliances still require more selling, and, in some instances, inducements to buy, than others, and that in supplying these inducements to the consumer the Utility is fulfilling the first part of the Dealer's slant on a Cooperation Program, namely, making it possible to sell more appliances. The second part of the dealer's angle, that of "making more profit," is another phase of Dealer Cooperation that requires careful study and consideration. By way of example, Mr. Dealer has a choice of selling two products having the same end use. On one product the selling price is 25% less than the other (reduced sales resistance) gives him an opportunity to sell some labor along with the appliances and nets him an overall profit equal to another product (using your fuel and hence one included in your Dealer Cooperation Program). This dealer must be shown the advantages of the appliance using your fuel—true—but there is also an economic selling job for you to do. Just telling him to relate to his customer how much better the appliance using your fuel is—is not enough. He must be *shown*, yes, conclusively shown, and please don't get back to that old phrase of "educating the dealer." When your fuel requires certain installation requirements above and beyond that required on a similar appliance using a different fuel, make an allowance for it, and don't try to imply to the dealer that this is something for *him*. Take your dealers into your complete confidence and be honest in your demands on him and equally honest in accepting your share of problems which are mutual.

Where do we fit our customer into this Dealer Cooperation picture—By providing to the customer the best possible appliance, using the best possible fuel, supported by the best possible service, at a price that is right, and on which everyone involved makes a reasonable profit. Again let us fully realize that Cooperation is really an enlightened form of selfishness. Yes, gentlemen, if you are to have a Real Dealer Cooperation Program, by all means, "Deal in the Dealer."

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Presented at 20th Annual Business Conference, New England Gas Association, Boston, March 20-21, 1947.

Consolidated of Baltimore Elects Officers and Directors

Wm. Schmidt, Jr. was reelected Chairman of the Board of Directors of the Consolidated Gas Electric Light and Power Company of Baltimore and President at a meeting of the Board of Directors following the annual stockholders' meeting on March 27th.

The Company also announced the reelection of Charles P. Crane, Executive Vice-President, Henry R. Cook Jr., Herman L. Gruehn, Ralph L. Thomas, and J. Theodore Wolfe, Vice-Presidents; Austin E. Penn, Secretary, and Francis E. Rugemer, Treasurer.

Milwaukee Gas Light Co. Elects New Directors and Reelects All Officers

At the annual meeting of the stockholders of the Milwaukee Gas Light Company held on Friday, March 14, 1947, three new members were named to the board of directors.

They are William G. Woolfolk, chairman of the American Light & Traction company; Ralph T. McElvenny, vice president of the American Light & Traction company and assistant to the chairman, J. A. B. Lovett, president of the Milwaukee Solvay Coke company.

Directors re-elected are Frank L. Conrad, president of American Light & Traction company; Bruno Rahn, president Milwaukee Gas Light company; Louis T. Smith, secretary-treasurer of the Gas company; Chester O. Wanvig, Herbert F. Lindsay and W. C. Buchanan.

At the directors meeting, the officers renamed are: President, Bruno Rahn; vice president in charge of sales, Bernard T. Franck; vice president in charge of operations, Erwin C. Brenner; secretary-treasurer, Louis T. Smith; assistant secretary-treasurer, Paul J. Isme; assistant secretary-treasurer Robert Johnson, and assistant secretary, Thomas M. Leahy.

Cribben & Sexton Readjusts Sales Territories

A reorganization of the sales department of Cribben & Sexton Company has recently been announced by Harold E. Jalass, General Sales Manager.

Fred F. Lauer, operating out of Newark, N. J. as Eastern Division Manager, will direct all company activities from Maine to Florida.

Eleven states in the North-Central part of the country have been assigned to John F. Schellenberg, Central Division Manager, with headquarters in Chicago.

Metropolitan Chicago, formerly handled by Mr. Jalass, is now under the direction of Frank H. Goetz who was transferred from Michigan. Two men have been added to assist Mr. Goetz, John C. Wilkinson and George Waber.

Three sales territories have not been placed under division managership. These areas will continue to be operated under the direct supervision of Mr. Jalass—Pittsburgh, John McMahon; Denver, Eugene Sparks and Kansas City, Henry Shannon.

KITCHEN PLANNING—One of the important research projects of the Servel Homemaker's Institute is the planning of up-to-date kitchens to save walking, stooping. Starting with an entirely fresh approach to the problem of reducing kitchen work-hours, it will soon announce an entirely new concept of kitchen planning that offers a practical answer to many everyday problems of efficiency.

on at SERVEL'S NEW HOMEMAKER'S INSTITUTE

AMERICA'S GREAT NEW "HOME EC" CENTER

Just about a year ago, the new Servel Homemaker's Institute quietly opened its doors at Evansville, Ind. Since then, a growing staff has been at work here helping build the prestige of the Gas Industry.

Organized in three divisions—Home Economics, Kitchen Planning, Test Kitchen—its research has been fanning out in many directions. Problems of nutrition are natural for this group, for Servel, maker of the Gas Refrigerator, has always been interested in new developments in food and food use. Here has been initiated a fresh approach to the planning of modern kitchens, to bear results in the new Servel Unified Gas Kitchens. At the Institute, too, are conducted continuous experiments in use of Gas Appliances.

To tell you what is going on in the field, the Institute is issuing timely bulletins. First is the monthly Newsletter—brief, newsy, filled with facts.

For professionals and homemakers alike, the Servel Homemaker's Digest is issued by the Institute four times yearly. It gives a quick condensation of articles of household interest from leading home and women's publications —Good Housekeeping, Woman's Home Companion, House Beautiful, Better Homes and Gardens, House and Garden, Parents', Woman's Day, Family Circle.

The Servel Homemaker's Institute is alive to the needs of Gas Industry today. It will continue to build the modernity of Gas and Gas service today.

PUBLICATIONS—The monthly Servel Newsletter and the quarterly Homemaker's Digest bring news of interest to both professionals and consumers.

Servel
INC.
EVANSVILLE 20, IND.

COLUMBIA GAS SYSTEM in 1946

From the Annual Report of Columbia Gas & Electric Corporation

Columbia Gas System is now engaged principally in producing, purchasing, transporting and selling gas. During 1946, Columbia Gas & Electric Corporation complied with the Securities and Exchange Commission's order for geographic integration. This included the sale of its interest in The Dayton Power and Light Company and The Cincinnati Gas & Electric Company.

Columbia Gas System now consists of the parent Corporation, Columbia Engineering Corporation, the subsidiary service company, and nineteen subsidiary operating companies constituting a completely integrated system.

The System supplies directly or indirectly, about 1,500,000 residential, commercial and industrial customers in Kentucky, Maryland, New York, Ohio, Pennsylvania, Virginia, West Virginia and the District of Columbia.

During the year the Corporation redeemed its Bank loans, Debenture Bonds and Preferred and Preference Stocks and two new issues of Debentures were sold at lower interest rates. This refinancing leaves the Corporation with only one class of stock, subject to $97,500,000 of debt in short term serial Debentures and long term sinking fund debentures—a sound and conservative capital structure.

COLUMBIA GAS & ELECTRIC CORPORATION AND SUBSIDIARY COMPANIES
PRO FORMA CONSOLIDATED INCOME STATEMENTS

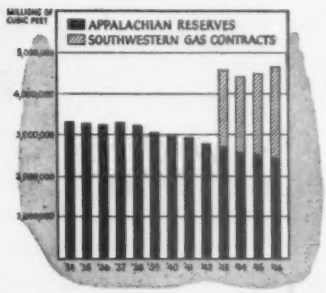
	1946	1945	1944	1943	1942	1941	1940	1939	1938	1937
	$	$	$	$	$	$	$	$	$	$
Subsidiary Companies:										
Gross Revenues	95,070,481	86,917,688	83,329,353	87,880,149	81,217,593	75,025,186	73,223,570	65,698,462	61,101,352	68,834,327
Operating Expenses and Income Deductions	75,907,977	70,419,714	67,065,962	71,854,730	66,163,901	61,127,278	58,822,023	52,025,856	49,807,975	53,078,969
Balance Applicable to Corporation	19,162,504	16,497,974	16,263,391	16,025,419	15,053,692	13,897,908	14,401,547	13,672,606	11,293,377	15,755,358
Columbia Gas & Electric Corporation:										
Net Expenses	1,578,126	1,633,197	1,949,813	1,920,152	1,772,249	1,417,328	1,353,888	1,566,753	1,403,123	1,490,842
Balance Before Fixed Charges	17,584,378	14,864,777	14,313,578	14,105,267	13,281,443	12,480,580	13,047,659	12,105,853	9,890,254	14,264,516
Fixed Charges:										
Interest on Debentures	2,796,875	2,796,875	2,796,875	2,796,875	2,796,875	2,796,875	2,796,875	2,796,875	2,796,875	2,796,875
Other Deductions	108,757	112,728	108,306	127,704	139,038	194,204	192,420	203,941	260,045	286,641
Total Fixed Charges	2,905,632	2,909,603	2,905,181	2,924,579	2,935,913	2,991,079	2,989,295	3,000,816	3,056,920	3,083,516
Consolidated Net Income*	14,678,746	11,955,174	11,408,397	11,180,688	10,345,530	9,489,501	10,058,364	9,105,037	6,833,334	11,181,000
Consolidated Net Income per Share of Common Stock Outstanding										
Before Provision for Retirement of Debentures*	1.20	.98	.93	.91	.85	.78	.82	.74	.56	.91
After Provision for Retirement of Debentures*	1.04	.81	.77	.75	.68	.61	.66	.58	.40	.75

The above statements are on a "pro forma" basis—that is, they have been restated as though the System during the periods covered had been the same as it is now.

These "pro forma" statements and figures exclude, for the entire periods covered, the operations of companies which have been divested and give effect to the refinancing which has been completed. Only on this "pro forma" basis can information concerning past periods be given which is in any sense applicable to the present System; however it must be remembered that the present System did not exist as such in these past periods and the pro forma figures are of necessity restated figures, adjusted to project a present situation into the past.

*The Indenture securing the Corporation's new Debentures requires the Corporation to make regular annual payments for the retirement of Debentures, ranging from $2,000,000 in the years 1947 through 1949 up to $3,700,000 in 1970. Although payments to retire debt are not, strictly speaking, charges against income, they must be taken into account in any realistic view of the balance of earnings which the Corporation will have available for Common Stock dividends. Accordingly, in the pro forma income statements for past periods, the net income per share of Common Stock has been shown both before and after deducting from net income an amount of $2,000,000 for debt retirement.

COLUMBIA'S GAS RESERVES



There is ample gas in Southwest fields which, with The System's Appalachian supply, is sufficient to service Columbia's customers for many years to come. All that is needed are new transmission facilities, construction of which was virtually halted by the shortage of steel and other materials. Columbia's gas reserves are currently estimated at 4,633,000,000 Mcf.

The information set forth here is not given in connection with any sale, offer or solicitation of an offer to buy any securities.

COLUMBIA GAS SYSTEM

The Manufacturers Light and Heat Co. The Ohio Fuel Gas Co.
United Fuel Gas Company

Amere Gas Utilities Company
Binghamton Gas Works
Central Kentucky Natural Gas Co.
Gettysburg Gas Corporation
Home Gas Company
Natural Gas Co. of W. Virginia
Cumberland & Allegheny Gas Co.
The Keystone Gas Co., Inc.
Virginia Gas Distribution Corporation

Condensate Removal by Special Drip Truck

By

D. S. Martin

Superintendent of Distribution
Citizens Gas and Coke Utility
Indianapolis, Ind.

Truck Model, Capacity 425 Gallons

THE CITIZENS Gas and Coke Utility distributes manufactured gas practically all of which is pumped by compressors at a maximum of 25 lb. gauge pressure. Gas is delivered to the outlying territories at these pressures, with house regulators on each service. The greater part of the send-out however, is delivered to the customer by low pressure mains fed through district regulators from the pumping mains. The gas is saturated and loses water and light oils in the distribution system due to temperature and pressure conditions. The removal of this condensate from the drips is always a problem, but it has become quite a chore since the send-out has more than trebled due to house heating and increased industrial loads since the war.

Our drip equipment consisted of two 1-½ ton trucks with 400 gallon tanks and reciprocating pumps driven from power take-off. It was customary to use one truck and have the other for a spare, but this winter we have had to keep two trucks going, since the amount of condensate has increased to over 4000 gallons per day. The send-out has more than trebled in the past few years. Both trucks were old and it was decided to replace one of them, but before doing so, we decided to investigate the possibilities of improving the equipment. The reciprocating pumps gave trouble due to vibration, also, dirt, scale et cetera, lodged under the valves, but they did have one advantage; they did not have to be primed. We investigated all styles of pumps and decided that the Whittington Scavenger pump could be adapted to our purpose.

The New Unit

The new unit we adopted consists of a 4½ H. P. air cooled gasoline engine that drives a centrifugal pump which circulates water through special jets. These jets exhaust the air out of the container tank and the pump never handles the liquid from the drips; only clean water which is in a separate compartment. A hose connection from the container tank with a valve on the end is connected to the 1" drip riser and when the hose valve is opened, the vacuum in the tank pulls the water and oil out of the main.

The complete unit consists of a tank 4' dia. x 8'9" long, with dished heads and two compartments mounted on a K-5, 1½ ton, 179" wheel base International truck. The gasoline motor and pump unit is housed in a compartment back of the cab. Suitable steel tool boxes are built in on each side of the tank. The container part of the tank holds 425 gallons, and 110 gallons of water fills the circulating compartment to the proper level.

The usual procedure in pumping drips is to connect the hose to the drip and let the pressure in the gas main blow the condensate into the tank. The pump is run only on low pressure drips, or where the pressure in the main is not high enough to clear the drip as quickly as desired. Another feature of the unit is the ability to put pressure on the container tank by means of a valve arrangement. This speeds up the emptying of the tank. Our practice is to drain the water off the bottom of the tank, and blow the oil into a storage tank to be accumulated and sold in carload lots.

The new drip truck was put in operation January 10, 1947, and to date we have experienced no trouble with it, even through the recent cold weather. The pump runs two or three hours per day and uses about 1½ to 2 gallons of gasoline.

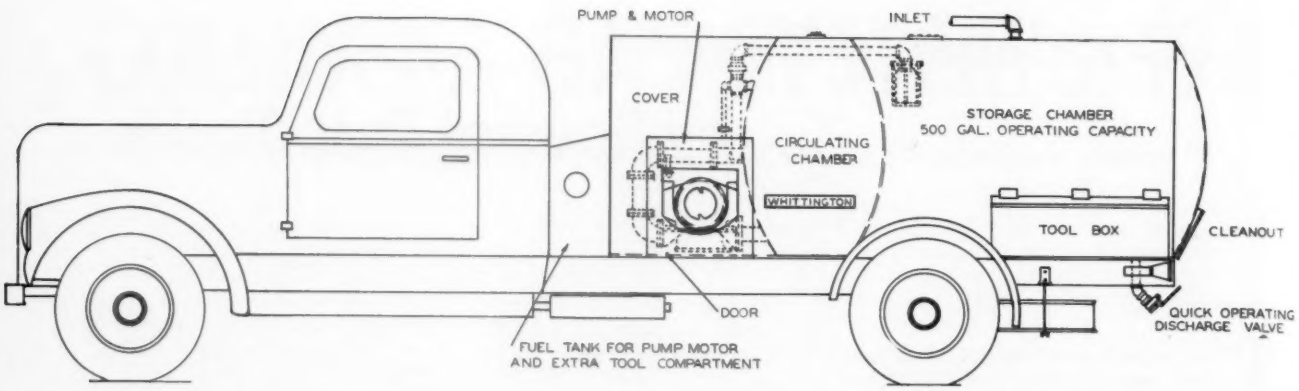
Service Stoppages

The unit should have an application in clearing stoppages from services although the tank on our unit is probably too large. The vacuum would pull dirt and rust from the service into the tank, then by reversing the cycle, pressure could be applied to blow the service.

Our unit is painted beige gray, the Utility color, with red lettering on the doors. The back end is painted with black and white diagonal stripes, also as a safety measure, a flasher light is mounted on the back end for use under track elevations and on dark days. The management of our Utility is very particular about the appearance of our rolling stock, but apparently we will have no trouble in keeping it clean as we have always had with all former equipment. It is a great improvement over the old hand pump and barrel method.

Statement by The Manufacturer

The Whittington Hydro-Scavenger was originally developed for cleaning the coolant and cutting oils from the sumps of precision grinding machines. Later a new feature was added.The machine could be loaded by vacuum, transported and then unloaded by pneumatic pressure. Many uses were found in widely varying industries for the unit which was furnished on casters in 50, 100 and



200 gallon sizes. Interesting applications have been found for the manufactured gas industry. The distribution departments needed equipment for effectively removing the condensate from the drips; also for removing stoppages in service leads. So—the Hydro-Scavenger appeared as a 300 gallon trailer and as a truck with 425 gallon load capacity. Photos are shown herewith.

A very flexible unit, this machine may be had in most any size with modifications incorporated to suit the particular application. For instance a boiler or an oil burner may be installed on the truck for heating drip oil to remove an accumulation of gum. This is sometimes desirable where the use of solvent is regarded as too costly.

River Crossings

A stationary model has been developed to meet the need for equipment to automatically collect the condensate at river crossings. This unit is permanently installed at the crossing. It collects the drip and returns the gas to the main. The tanks are then drained periodically as the Hydro-Scavenger Truck makes the rounds.

The suction and pressure features,

Trailer Model, Capacity 300 Gallons

used alternately, are invaluable for removing gum and scale in the case of stubborn service lead stoppages.

All units of this type develop up to 28" Hg vacuum. Ordinarily 25 lbs. pressure is desired and this is standard. However the pressure may be varied according to the particular pump used. Construction is rugged with an absence of delicate parts.

The truck model shown in accompanying line sketch is equipped with sight glasses to indicate the water level in the recirculating tank and the oil level in the collection tank. A separate gasoline engine drives the Scavenger Pump. The size of the hose has much to do with the speed of operation. The larger the hose the faster but also the clumsier to handle.

J. D. von Maur Appointed Consultant at Toronto

Effective January 1st, last, Mr. J. D. von Maur relinquished direction of work of the Distribution Department, Consumers' Gas Company of Toronto, and assumed the duties of the newly-created position as Consulting Engineer for the company.

He has served not only the Consumers' Gas Company as Engineer of Distribution for over 23 years, but the gas industry of Canada as well.

P. W. Geldard, who has for some years been Mr. von Maur's able assistant, has succeeded to the post of Engineer of Distribution. Mr. C. Leedham, another long-service distribution department employee, will take over the superintendency of the Fitting Department; W. Walburn will take on the superintendency of the Street Department; W. Heaton will be Superintendent of the Mechanical Division, and G. Refern will act as chief draftsman of the Streets Department.

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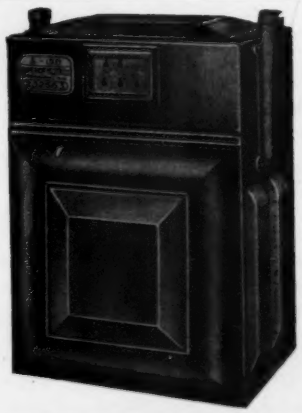

RECENT COURT DECISIONS Affecting Gas Utilities

New Law Suits Involving Authority of Commissions

By
Leo T. Parker
Attorney at Law
Cincinnati, Ohio

IT IS WELL KNOWN that a producer, seller or distributor of gas who does *intrastate* business is under the jurisdiction of the State's Public Service Commission. Generally speaking, such corporation must file with this Commission, its schedules of rates and also its rules as to terms and conditions for the sale and distribution of gas.

It is important to know, therefore, that interstate business relates to gas sold and distributed by a seller in *one state* to purchasers in *another* state. Thus, broadly, interstate business of a gas corporation is business transacted between the corporation and firms located in different states.

The purpose of this article is a review of late and leading higher court decisions knowledge of which will assist readers to *prepare* to win unavoidable suits. Therefore, we shall, first, review higher court decisions involving distinctions between interstate and intrastate business.

Federal Power Commission

Considerable discussion has arisen from time to time over the legal question: When may the Federal Power Commission fix rates for gas? In other words, what is meant by a "sale in interstate commerce"? First, when considering this question, it is important to consider Section 5 (a) of the Natural Gas Act. This Act itself provides that the Act shall *not* apply "to the production or gathering of natural gas." And, most important the Commission, of course, has no jurisdiction over gas sold in intrastate commerce. Thus in controversies involving the right of the Commission to regulate gas rates, it must be decided that the gas sales are in interstate commerce.

For example, in Interstate Natural Gas Company, Inc., v. Federal Power Commission, 156 Fed. (2d) 949, reported October, 1946, it was shown that a corporation owns 110 producing gas wells and controls 56,555 acres of natural gas lands in the Monroe Gas Field of Louisiana. It gathers the gas from its wells and also gas which it buys from other wells. Through its own pipe lines the corporation transports the gas to points within the State of Louisiana where *it is delivered to interstate* pipe line companies which in turn transport the gas to individual customers and to utilities in *other* states which then sell the gas to the ultimate consumer.

Before the gas is transported by the interstate pipe line companies it *first compressed*, and its continuous transmission is thus *temporarily arrested* as it is made ready for its journey in interstate transportation.

The gas corporation contended that, therefore, the Federal Power Commission had no jurisdiction to establish rates of $4.66 per M.c.f., at which the corporation must sell gas *because*, first, by taking the gas from its journey in interstate commerce and *stopping* its journey to compress it, such gas was subject strictly to intrastate regulation; second, the gas corporation was in no wise affiliated with any of the purchasers of its gas; third, the gas corporation *produced* the gas; fourth, the gathering, and transporting to market, are necessary incidents to the production of gas, for there can be no sustained production unless the gas can be collected and carried to market; and fifth, the company made no sales in interstate commerce.

It is interesting to observe that this higher court held that the Federal Power Commission had authority to make rates at which the gas is sold by the corporation. This court held that the company did intrastate business saying:

"We agree with the Commission that the rates are within its jurisdiction and that petitioner has failed to show that they are confiscatory."

Also, see Peoples Natural Gas Company v. Federal Power Commission, 75 U. S. App. D. C. 235, 127 F. (2d) 153. This court held that a sale of gas in Pennsylvania to an interstate pipeline company, which *immediately* transported it to New York, was a sale of natural gas in interstate commerce for resale. Thus, it was held that the provision that the act did not apply to production or gathering and did not limit the commission's jurisdiction over such sales.

And again in the Canadian River Gas case, 324 U. S. 581, the Supreme Court of the United States said:

"The Act makes plain that the Commission has no control over the drilling and spacing of wells and the like. We only decide that it (Act) does not preclude the Commission from reflecting the production and gathering facilities of a natural gas company in the rate base and determining the expenses incident thereto for the purposes of determining the reasonableness of rates subject to its jurisdiction."

Must Produce Books

At common law there was no right of any investor to take testimony of any witness to determine whether a firm was violating a law. And, during modern times no person can be compelled to testify against himself. However, this privilege against self-incrimination is *personal* and cannot be possessed by a corporation. Therefore, no individual can object to the production of corporate books or refuse to produce

them on the ground that they will incriminate him, since there can be no personal privilege as to such books.

For example, in Davies v. Columbia Gas & Electric Company, 68 N. E. (2d) 571, certain consumers sued a gas corporation, and its officers, for damages for alleged dilution of natural gas.

This court held that the officer, of the corporation, whose disposition was being taken was not entitled to refuse to produce documents, books, etc. on the ground that they were evidence that may incriminate the officer.

Therefore, this court held that the officials of the gas corporation must produce all correspondence, telegrams, inter-office and inter-company memoranda, including engineering studies and reports. This court said:

"An officer of a corporation is protected by the self-incrimination privileges of the Fifth Amendment against compulsory production of his private books and papers, but this privilege does not extend to the books of the corporation in his possession. An officer of a corporation cannot refuse to produce documents of a corporation on the ground that they would incriminate him simply because he himself wrote or signed them, and this even if indictments are pending against him."

Inspection Fees

In Memphis Natural Gas Company v. McCanless, 194 S. W. (2d) 476, reported August, 1946, the higher court held that inspection fees paid to a state by public utilities can be used *only* for expenses of the administration and supervision of public utilities, and payment of such expenses is limited by the amount of the special fund to which the fees are paid.

This court held, also that the validity of inspection fees imposed on a natural gas company is not affected by the fact that, after imposition of such fees, the company was put under control of the Federal Power Commission.

Order Stayed

In Panhandle Eastern Pipe Line Company v. Federal Power Commission, 154 Fed. (2d) 909, reported June, 1946, it was shown that the Federal Power Commission directed a gas company to reduce its rates for transportation and sale of natural gas in interstate commerce for resale.

In later litigation the Federal Court granted a "stay" of this order and held that the gas company should bear the expense of distributing to the ultimate consumers *funds* impounded under this stay order.

Appropriation Held Valid

According to a recent higher court a state Legislature has the right to make an appropriation for payment of the Federal Power Commission's expenses in making an investigation, authorized by statute, to ascertain the fair value of property owned by public service corporations furnishing gas, as basis for rate-making.

For example, in Garvey v. Trew, 170 Pac. (2d) 845, reported August, 1946, an Arizona statute was before the higher court for interpretation. This statute authorizes the Arizona Corporation Commission to make necessary investigation, appraisals, etc. and ascertain the fair value of the property of *all* public service corporations in the state which sells gas and electricity. The statute further specified that the reason for these investigations were "for the purpose of establishing as basis for rate-making purposes." This state law also authorized the Commission to work in co-operation with the Federal Power Commission in making the investigation, and appropriated 50,000 to the state's Commission for the payment of the expenses of the Federal Power Commission.

After considerable controversy the higher court upheld the validity of this state statute.

Agency Contracts

Considerable discussion has arisen from time to time over the legal question: If a gas company sells or distributes gas from one state into another *through its agent* does it transact intrastate business? Usually when determining this question the court must decide whether the seller of gas in a foreign state is an agent of the distributor.

Generally speaking, in suits of this kind, the higher courts have held that where a gas corporation makes a contract with an affiliated company, the burden is on such gas corporation to prove the fairness and reasonableness of the contract. Many courts assume that an agency exists where one corporation controls another corporation, through stock ownership. In other words, under these circumstances the court will assume that the two companies are *not* dealing at arm's length with each other.

Therefore, with respect to contracts that might affect gas rates the burden is on the gas corporations to prove that such contracts are reasonable. See the leading case of Dayton Power & Light Company v.

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Public Utilities Commission, 292 U. S. 290, where the Supreme Court of the United States reaffirmed this doctrine. Also, see Western Distributing Company v. Kansas Public Service Commission, where the Supreme Court of the United States said:

"Even so, the burden of proof was on the buyer of the gas to show that in these transactions with the affiliated seller the price was no higher than would fairly be payable in a regulated business by a buyer unrelated to the seller and dealing at arm's length."

Must Prove Agency

Obviously, the legal effect of the above explained law, established by the Supreme Court of the United States, is that notwithstanding close relationship of corporations the alleged agency of one with respect to the other must be *proved*, otherwise the *distributor* will be held to be transacting *interstate business* and, therefore, it is *not* under jurisdiction of the state's Public Service Commission.

What Is Agency?

It is a well established law that certain legal relations must exist to constitute as "agency." Private intentions of the parties is *not* important. On the other hand, it is *not* essential that any *actual* contract should subsist between the parties or that compensation should be expected by the agent in order to create a legal agency.

For example, in the leading case of State Cities Service Gas Company v. Public Service Commission, 85 S. W. 890, it was disclosed that the Cities Service Gas Company, a Delaware Corporation, was distributing gas to consumers located in cities in Missouri *through* the Kansas City Gas Company; St. Joseph Gas Company; Joplin Gas Company; Carthage Gas Company; and Webb City & Carterville Gas Company.

The Public Service Commission of the State of Missouri contended that the Cities Service Gas Company transacted intrastate business in producing, gathering, and selling natural gas, produced and gathered in Texas, Oklahoma, and Kansas, and transported by it through its pipe lines into Missouri. The common stock of the Cities Service Gas Company, except qualifying shares held by the directors, was owned by the Empire Gas and Fuel Company, the common stock of which is owned by the Cities Service Company. The Public Service Commission further held that the Cities Service Gas Company should file its schedule of rates and comply otherwise with certain rules and regulations.

During the trial the Public Service Commission proved that the Gas Service Company owned the common stock of the Kansas City Gas Company, Carthage Gas Company, Jackson County Light, Heat & Power Company, Joplin Gas Company, St. Joseph Gas Company, Ozark Distributing Company, and Webb City & Carterville Gas Company. The entire capital stock of the Gas Service Company was owned by the Cities Service Company. The common stock of the Springfield Gas & Electric Company was owned by the Federal Light & Traction Company, which company was controlled by Cities Service Company.

In other words, the Cities Service Company owned and controlled all these companies, including the Cities Service Gas Company.

In view of these facts and, also, because of interlocking of the boards of directors of the Gas Service Company, the Cities Service Gas Company and the distributing companies, the Public Service Commission held that the Cities Service Gas Company was transacting intrastate business in Missouri.

The Cities Service Gas Company argued that (1) that the distributing companies are not its agent in the sale and distribution of industrial gas to consumers in cities of Missouri; (2) that it is not engaged in intrastate business by directly selling and distributing industrial gas to consumers in Missouri.

The higher court *reversed* the Public Service Commission's decision, and held that the Cities Service Gas Company was *not* transacting intrastate business and, therefore, it was *not* under the jurisdiction of the Public Service Commission of Missouri. This court said:

"The fact that the Cities Service Gas Company fixed the price at which industrial gas is sold by the Kansas City Gas Company does not of itself create the relation of agency."

How Gas Company Acted in a Disaster Emergency

Southern California Gas Company's disaster emergency organization was faced with its severest test in many years as a result of an explosion, reported to be caused by chemicals under high pressure, and which demolished an electroplating plant in Los Angeles on February 20.

The explosion, generally regarded as the most disastrous tragedy to occur in Southern California since the 1933 earthquake in Long Beach, completely destroyed the building of the O'Connor Electro-Plating Corporation damaged an estimated 150 structures in a two-block area, killed 15 persons and injured some 140.

How well the gas company's crews responded to the emergency was attested in a letter received by H. L. Masser, executive vice president, from John H. Alderson, chief of the Los Angeles fire department.

"Officers who worked at the scene of the explosion" (the letter stated) "on February 20 in the vicinity of Pico Boulevard and Stanford Avenue have commended to me the splendid cooperation that was received from employees of your organization, particularly in the rapidity and thoroughness with which all gas was shut off in the area and the checking and rechecking which was done to be sure all precautions had been taken. I wish to thank them through you for the assistance they furnished to this department."

The first crew man of the gas company was at the scene of the blast within a few minutes after the explosion occurred at 9:45 a.m. The first gas company representatives to arrive immediately began the job of shutting off meters and checking for gas leakage. Within a half hour the company had two score men on the job, including street department men, customer servicemen, and others. Field headquarters were established in the nearest undamaged building, and as soon as men arrived they were assigned by District Service Foreman Harold Pool to checking services and meters.

The explosion was so violent that gas company representatives decided to check all meters in an area of four square blocks, bounded by 10th Street and 14th Place, Central and San Pedro Avenues. Twenty-five gas company service men were assigned to the task of making checks for leakage and meter registration tests. Within four hours they checked 529 meters and closed 208 meters. Meanwhile another crew had been assigned to cutting off the escaping gas from the damaged pipes which supplied the electro-plating plant. Because of severe damage to buildings, a total of 68 gas meters were permanently removed the day after the explosion.

A check made by the Southern California Gas Company of all services and mains in the blast area has disclosed, it was reported, that only slight damage was suffered by the installations.

Gas Sendout Peak for Con. Edison, N. Y. in 1946

All-time peak records for distribution of electricity and gas in the area served by Consolidated Edison were set in 1946, according to an announcement made in February by President Ralph H. Tapscott.

Gas sendout in 1946, Mr. Tapscott announced, was 48,995,000,000 cubic feet, the highest in the history of the company. It surpassed the previous record, that of 1926, by 2,236,000,000 cubic feet, or 4.8 per cent.

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20th Annual Business Conference, New England Gas Association

APPROXIMATELY 600 gas men attended the 20th Annual Business Conference of the New England Gas Association held in Boston, March 20 and 21st. The papers presented covered a wide range of subjects of interest to all branches of the industry.

After the election of officers for the ensuing year, Clark Belden, Executive Secretary, presented his report. He reviewed the activities of the association for the past year, and, of national importance, mentioned a one-day conference between the Executive Managers of the Pacific Coast Gas Assn., the Southern Gas Assn., and the New England Gas Assn. This conference was held at A.G.A. headquarters. He said: "There was a full and frank discussion of many questions and a helpful exchange of information. We learned a great deal about each other. It has been suggested that this function be made a semi-annual or an annul affair. It would seem to hold very constructive possibilities.

"If one studies the association setup covering many of our leading industries—and ours certainly falls in this category—one will find that some of them have a much more comprehensive regional association setup than the gas industry has. That is, more comprehensive from the standpoint of regional associations with paid staffs. Of course, there have long been a number of regional gas industry associations which trade association executives customarily term "paper outfits", because they are manned by company representatives whose primary responsibilities are with their own companies. It might well be an excellent idea for the A.G.A. officers and directors to consider the desirability of encouraging the formation of 2 or 3 more regional gas industry associations with paid staffs. The action in this direction taken by the Southern Gas Association about a year and a half ago has already demonstrated its value. The comment has been made that the move should have been made sooner."

John A. Robertshaw, President, Robertshaw Thermostat Co., was unable to be present, and his paper was read by Frank J. Hoenigmann, Vice President, Florence Stove Co., Chicago. The paper was "Beyond the Blue Horizon." "We need more effective retailing," he said, "because the long term responsibility for volume sales depends upon the amount and the effectiveness of the merchandising at the point of sale.

"We feel it has been pretty well demonstrated that, with a utility actively merchandising, the quality of the average appliance and its installation is improved. A well managed utility merchandising activity does more to affect an increase of dealers into a program than possibly any other one thing that can be done.

"However, whether a utility sells or not, our future is going to rest on dealer sales. This is a joint problem of both the utility and the manufacturer and we must see that the right kind of retailing effort is obtained in every locality. Selecting dealers is the first step and is a subject for discussion within itself. Once the dealer is selected, he must be educated, in fact we must go further than that, we must inspire him, we must encourage him, we must furnish him with prospects and plans. Both you and we together must see that we provide good advertising cooperation. Lastly, to take advantage of the potentialities of this tremendous outlet for future sales, we both must see that these dealers sell and make a profit while doing it."

L. E. Knowlton, Engineer, Providence Gas Co., retiring President of N.E.G.A., in his address stated:

"To be free to deal intelligently with the present and to plan ahead it may be necessary occasionally to remove shackles imposed by the past. Frequently, in studies of possible revisions of policies to meet current conditions, we wonder why inertia has permitted the continuance of certain practices so long. In any public utility there is relatively stable operation and a decided tendency toward stability in organization and personnel. Perhaps stability is too mild a word. Possibly in some instances too high a degree of conservatism might be more honestly descriptive."

R. H. Hargrove, President, American Gas Assn., and Vice President, United Gas Pipe Line Co., outlined the association program of research and other activities; and also discussed the relationship of regional and national associations.

Edwin L. Hall, Coordinator, Gas Production Research Committee, A.G.A. touched on the developments in carburetted water gas, propane air gas, high B.T.U. oil gas, mixed

NEW ENGLAND GAS ASSOCIATION OFFICERS—1947-48

Front row, l. to r.: James E. Cook, president (vice-president and general manager, Lynn Gas & Electric Co.); L. E. Knowlton, past president (engineer, Providence Gas Co.); Edward G. Twohey, 1st vice-president (vice-president, Worcester County Electric Co.).

Back row, l. to r.: Clark Belden, clerk (executive secretary); Otto Price, treasurer (vice-president, Boston Consolidated Gas Co.); A. V. S. Lindsley, 2nd vice-president (vice-president, The Connecticut Light & Power Co.

gas and other processes. He outlined what progress was being made in each field.

Paul R. Taylor, Stone & Webster Corp., talked on the subject "New England and Natural Gas." After giving a brief outline of the history of natural gas production and transmission, he said: "I have pointed out in a rather hit and miss manner the many problems which face both the pipeline company and the distributor of the pipeline company's product before line capacity can be built more than half way across the United States for the purpose of bringing this highly desirable type of fuel to the gas companies of New England and deliver it at a price which will make it economically attractive. It is an undertaking which, looking at it today, cannot be completed tomorrow. The steel situation alone precludes its early construction. The question as to whether the Federal Power Commission will permit the transportation of natural gas beyond areas now not fully and satisfactorily served has not been answered. However, I would suggest that all of you here who represent gas utilities in this area begin to study your own particular situation with the idea of answering this question—"How will I utilize natural gas when it comes?"

The L. P. Gas Panel discussion composed of six executives of gas companies in New England, touched on the following subjects: Conversion of small plants and eventual replacement of mains, sale by a gas company off of its mains, enrichment-peak production, introduction on outskirts for pressure relief, probable future availability, and storage requirements.

Roy E. Wright, Director of Gas Sales, Negra Service Corp., presented a paper on "What's Cooking in the Commercial and Industrial Fields." Mr. Wright has had a wide experience in the commercial and industrial gas field, and discussed the importance of new developments, special application of gas and means to meet our competitive fuel challenge.

"Deal in the Dealer," was the title of a paper by B. A. Seiple, President, Jersey Central Appliance Co. His paper in full will be found elsewhere in this issue of the Journal.

Paper by Robert E. Ginna, Vice President, Rochester Gas & Electric Co., was on the subject "Management—Made Economies of the Gas Business." He presented the financial operation of the New England gas and electric utilities, 1938-1946, and described the economic characteristics of each group. His summary of observations was:

1. Earnings in the gas business improved more during the war years than that of the other utility groups. However, in the past two years, the incremental gas revenues have failed to overcome the present higher costs of operation. It may therefore become necessary to raise gas rates if net earnings are not stabilized by greater profitable sales volume.

2. Over the seven year period the apparent advantage gained in the lower "capital turnover" of the gas business has not been productive of better net earnings because of the burden of increased labor and material costs.

3. Compared with the other groups the gas companies maintained a more conservative common dividend policy up to 1945 and 1946 when they declared relatively the same dividends in spite of reduced earnings thus putting them on a comparative dividend basis with the electric group.

4. In marked contrast to the electric companies, the gas companies have since 1940 substantially raised the level of their provisions for depreciation and this fact helps to account in part for the lower net earnings available for common stock.

5. In the seven year period although the gross revenue of the electric utilities increased slightly more than that of the gas group, the difference in "operating ratios" remained relatively the same as between the two utility groups. However, the smaller margin of revenue above operating expenses in the case of the gas business calls for still greater efforts to increase the sales volume by selective load building, especially on existing facilities.

"Changes in Public Relations," was discussed by Glenn Griswold. Publisher, "Public Relations News," New York.

Louis Ruthenburg, President, Servil, Inc., Evansville, Ind., presented a paper entitled "Industrial Management Looks Ahead," which is printed in full in this issue of the Journal.

H. Carl Wolf, Managing Director, American Gas Association, talked on the subject "Programming for Progress" He outlined the make-up of the industry's comprehensive program, what it means to the industry and its objectives. He concluded by stating:

"There are many facets to this story of finding out the facts, telling them to the public and proving them in action and service. I have touched on only a few, and those are illustrative of what is going on. But together they spell unity of action and progress. The whole program is under review and close scrutiny in a study which will lead to a decision as to whether or not the industry should proceed with all or a part of them, or should augment or revise them. I think it safe to say that whatever the answer the gas industry will march forward with accelerated tempo, assured of having the newest and highest possible explosives obtainable to meet the pressing challenges ahead."

A.G.A. Industrial and Commercial Conference

THE Industrial and Commercial Gas Section of the American Gas Association held a sales conference March 17, 18 and 19 at Boston, Mass. Twenty-four papers were presented at the three day meeting and covered many phases of industrial and commercial uses of gas.

Subjects discussed in various papers included, how foods are best cooked, trend in food supply, commercial kitchen planning, selecting commercial cooking equipment, selling gas to bakeries and promoting gas for commercial cooking.

Industrial gas subjects presented included, what gas means to the industrial user, selling high temperature conversion ovens, drying ovens, low temperature radiant panels, important factors in oven design and use, heat applications in precision coating, new fields of prepared atmospheres and how to sell gas in textile processing. Copies of the papers covering these subjects can be had by addressing A.G.A. headquarters.

Frank H. Adams, President, Surface Combustion Corp., presented a paper titled "Industry-wide Cooperation." After reviewing some of the conditions existing in the industry today Mr. Adams said:

"The factors which I will summarize for your consideration are perhaps all known to you, and are presented here to serve only as a basis for the projection of sales planning action. Let us examine a few of the favorable factors, or those assets which automatically support an aggressive program.

"Eighteen months after VJ Day we find ourselves in the strongest economic and competitive position we have ever held in the history of our industry. Manufacturers have accepted gas as the most practical fuel for heating and heat treating of glass and metals. The cooking load has reached an optimum; automatic laundries and dish washers are making automatic water heating a necessity. The demand for gas house heating is unprecedented. The market is bullish. Goodwill has increased tremendously since prewar days, due to the remarkable service rendered by the utilities and gas burning equipment during the war years. Public confidence in the gas utilities is at an all-time high.

"Technological developments have out-distanced those made in competitive fuel fields. Manufacturers have developed equipment and processes that greatly enhance the economic advantages of gas as an industrial heating and heat processing fuel. Domestic equipment has set the pattern for competitive emulation."

After describing a few of the more important developments in industrial gas equipment, Mr. Adams said:

"In order to better evaluate their influence upon our procedure, let's consider the factors which interfere with the immediate formulation of a general merchandising plan to attain our desired position.

"First: You have over-sold your capacity. Your service in a period of five years when you had no sales

Frank H. Adams

force has obtained an acceptance that seems to many surprising, if not frightening. It is the modern version of the better mousetrap and the public has not beaten a path to your door, but it has followed a well beaten path of satisfied customers.

"War Industry had first call on your service and found it met its requirements in service and equipment. The utilities and the gas equipment manufacturers were ready for that call. Instead of a restriction of use and a decreased demand with the return to civilian production, there has been little if any decline, and in some communities the industrial gas load has actually increased.

"In the house heating field, you have had the finest sales force conceivable during the war period—your customers who have sat back in comfort boasting of their good judgment and foresight, and watching their neighbors worry with oil rations, coal deliveries, and coal shortages. Now all of those neighbors are wanting and demanding the comfort and convenience of gas heating.

"There appears to be no reasonably accurate measurement of the acceptance of gas for house heating. While it was anticipated that a greater per cent of the people would want gas for house heating after the war, no one to my knowledge made a national public opinion poll to determine the number of coal and oil users who wanted to convert to gas, nor the number of gas heat users who wanted to up-grade their equipment. The only forecasts available were the number of new homes which would be heated with gas. These forecasts, based upon percentages, were low. They were exceeded by 50% Many manufactured gas properties added more heating load in the past eighteen months than had been placed on their lines in the previous ten years.

"Second: As a result of the inability of gas companies to materially increase their facilities for the supply of gas during or immediately following the war, this increased load caused many of them to wholly or partially discontinue the installation of commercial and residential heating equipment, shut off interruptible load, and in certain areas to discourage the use of gas for additional industrial heating and processing uses.

"In some communities, utilities found it necessary to temporarily discontinue furnishing gas to industrial customers. Although these interruptions of service were of short duration and at infrequent intervals, they were costly to workers and manufacturers and could prove costly to the utilities. If not eliminated, they may impair goodwill and cause partial loss of industrial load.

"This situation is further aggravated by the long delivery on materials necessary to supply this demand. Not all your potential customers can or will wait for you.

"In communities where active public relations were discontinued or neglected builders and householders were aggravated and provoked by the

inadequacy of supply, seemingly poor service and the necessity of using unsatisfactory substitute fuels. In some instances this condition has been further aggravated by the manufacturer's inability to supply sufficient equipment when needed. This reaction is only natural. The public does not know your problems and of its own volition will make only a cursory examination of facts.

"Third: There is a question as to the quantity and economic stability of this load at rates necessary to justify investment in additional plant capacity. This question is particularly serious with respect to house heating which it may not be possible to balance with interruptible or off-peak industrial and commercial load.

"Fourth: We have the problem of raising capital for expansion of facilities when the policies and decisions of the Federal Power Commission seem adverse to sound investment.

"Fifth: It now appears that 1947 will be a year of limited sales activity, of rehabilitation, of expansion in many properties. During this time certain markets will be neglected and competition will there become thoroughly entrenched. We do not have the inherent protective features of the automobile and building industries. There is no substitute for an automobile; no one is going back to the horse and buggy; and the airplane cannot supplant the automobile. There is no substitute for housing. These markets must and will wait. But there are substitutes for gas and gas equipment. The competitive industries will not only take advantage of our present restricted activity, but will put forth every effort to build future acceptance and make our task of recapturing a neglected and competitively presold market both costly and laborious.

"To some of us our present position may be a migraine, apparently incurable. To others it may resemble a Frankenstein. And to the marketing men, inability to take advantage of our present favorable position may be analogous to the ardent Lothario, who, having wooed and won the maiden fair, deserts her at the church door.

"Our situation is paradoxical, without precedent in the history of our industry. It contains most of the market elements essential to success admixed with the elements conducive to stagnation and deterioration. It would be so much simpler if we could ignore the need of additional capital investments for plant expansion and new pipe lines and the expenditure of effort and energy that an expanding industry imposes. The status quo indeed has its appeal.

"And herein lies the real challenge to our initiative, our foresight and our confidence in the gas industry. Can the industry ignore the need for expansion and maintain the status quo?

"I believe the utilities should accept the full responsibility of providing gas service to meet the demands of the market which rightfully belongs to it, and which it can supply on a sound economic basis to itself and its customers. People expect to be served by gas. Backed by politicians, public opinion will demand it. Industry needs gas. Your community needs expanding industry. You need industry to insure your present investment.

"This means accepting a higher saturation of house heating than has been considered in many cities. The economics of the industrial and house heating load should be considered together—not independently. Industrial and commercial off-peak load should be developed to balance house heating load as far as possible.

"This may mean lower overall load factors and higher rates. That challenge too should be accepted. Gas service has a public acceptance it never achieved in the prewar period. It can be more easily sold now over competing fuels at prewar premiums or more than was possible then.

"I would not suggest that the rate be raised to a level where it would price people out of the market, nor to a point where a decline in spendable income would encourage the removal of equipment. People right now are price increase conscious. The public, including present users, would not object to a reasonable increase in rates. It is conditioned to recognize the necessity of price increases, knows the cost of competitive fuels and realizes that gas companies have had no relief from increased costs. Most rates are twelve years or more old and are not based on today's conditions, or costs. People realize that they are getting a bargain in gas heat at today's prices.

"I do not believe that gas heat is today, or again will be considered a luxury. Nor do I believe that a reasonable increase in rates or a decline in incomes will have a noticeable effect upon reverts or the discontinuance of heating service. Gas heat is a convenience which the user wants and will definitely appreciate and pay for, even if it means an adjustment in the user's spending and method of living. Gas heat has reached the same stage in public acceptance as the automatic washer and refrigerator. Yearly acceptance charts of these items show a definite pioneering period when people asked, "How much does it cost?" when universal appreciation was being developed. Once established, sales began to climb and outlets started selling a commodity. I believe gas heat has reached this state in its acceptance.

"Therefore, we should re-cast our sights—recognize that the prewar marketing pattern of establishing the value of gas heat has changed to public recognition and demand for its comforts and conveniences, even at a comparable prewar premium price."

He referred to the progress being made by the Production Research Committee in showing the way to develop the maximum capacity from present equipment and the part LP gas is playing in peak load production. "Assuming we are going ahead," he said, "then let's consider the job of the utility sales department and in what ways manufacturers and utilities may cooperate in what is obviously a major promotional program.

"Your present job is to keep customers sold on gas, even though you cannot make an increased supply of gas immediately available.

"One of my salesmen remarked to me some time ago that it would seem good when he again had something to sell and when appliances were again in full supply. I agreed with him but asked him if he didn't think he had at present the most important and difficult sales job he had ever had—that of maintaining goodwill while he could give insufficient equipment and limited service. Your sales departments have the same job. To carry it out, I would recommend the upgrading, where practical, of all equipment, both industrial and domestic. Customer contacts through competently organized and operated service departments afford perhaps the best opportunity your company has for the building and holding of customer goodwill.

"Industrial heat application surveys should be made for the purpose of improving present service and to guide and assist the industrial customer in the proper selection, application, installation, adjustment and servicing of equipment. Under present conditions this should not be left to the equipment manufacturer.

"In this connection, studies should be made of every possible off-peak and interruptible industrial load which can be secured on a sound

basis to balance house heating. Sell your own managements on what can be done in integrating these loads.

"While the gas company salesmen are not usually expert process engineers who are called in when major equipment is purchased, they should actively sell standard furnaces. Satisfactory experience and contacts on such installations often pave the way for much larger loads.

"I would establish the most effective Public Relations program in the history of my company. Today's conditions necessitate dynamic activity. That program would make every effort to first provide present customers with adequate supply, improved equipment operation, replacement of faulty or uneconomical equipment, and a practical and workable service policy.

"I would use continuously every available medium to make my problems, my program, my progress toward rendering better service known to the public. I would conduct public opinion surveys and demonstrate my good neighborliness by courteous treatment of customers, my good citizenship by providing the broadest possible service to my town, which is also my customers' town.

"I would establish a scientific control of sales and advertising expenditures. When sales are easy to get, expenditures in most business are at a high level. Conversely, when business has been slow and difficult to get, sales and advertising expenditures have been at a low level. If we are to overcome some of the handicap of shortages, lack of contact, and the resistances within a buyer's market, selling and advertising pressures should be maintained, perhaps increased during this period of restricted expansion.

"The manufacturers' cooperation in this program follows the lines already requested and planned—equipment, technical information, advertising, research. In those things you have already their enthusiastic support. Admittedly, as a manufacturer of equipment, I look with concern upon the sales restrictions now imposed, the time apparently needed to provide an adequate gas supply, and the effect these factors will have upon our future manufacturing policy and equipment sales.

"While the gas industry is plagued by all those factors which are a carryover from the war, yet I have every confidence that the men who have assumed the stewardship of the industry face the facts with courage and determination to consolidate its gains and continue the service it has so greatly advanced in the past 25 years. It has been a dynamic industry. Let's continue that policy."

Thomas J. Gallagher

R. H. Hargrove, President American Gas Association, addressed the luncheon meeting on Tuesday. His subject was "The Trend to Gas Grows Stronger." He reviewed the great progress gas has made in industrial and commercial uses, the research and promotional plans now being carried on and the acceptance of gas as the most favored domestic fuel as evidenced by the fact that in 1946 gas customers numbered 20,875,000 as measured by meters in service.

Regarding competition Mr. Hargrove said:

"We will be faced with increased competition for the customers' dollar by those who strive to render the same character of service as we. It is evident that if we expect to get our share of business, those who represent our industry must know their business, and know it well. Much of this knowledge must come from within our own organizations. There must be realization of the importance of the problems ahead and downright enthusiasm on the part of everyone from the head of the organization down. Adequate employee selection and training programs should be instituted and every modern devise set up to insure a group of capable and enthusiastic employees. Employee selection cannot be haphazard. Employee training cannot be taken for granted. Employee rewards cannot be left to guess work.

"Tomorrow's customer also must come in for some particular attention. The progress we have made in utilization of gas must be carried on. Our research programs will serve as beacons to light the path that must be followed by the engineers and scientists in the laboratories of the

FOR REPLACEMENTS

suggest to your customers the dependable

GORDON

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Conversion Gas Burner

Over 100,000 in operation today attest to the efficiency and satisfaction of America's pioneer conversion burner. Five models promise service-free settlement of every heating need, domestic or industrial.

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137 Arthur Street • Buffalo 7, N. Y.

Pioneers of the gas conversion industry and makers of "84", "302-20", "400" and Nordensson conversion burners

utilities, the manufacturers of appliances and equipment, and in the laboratories of our splendid schools and universities.

"These programs can and must be implemented through salesmanship. The entire effort of our industry is dependent on sales promotion and this makes it doubly important that your sales organizations be keyed to our over-all utility activities. I urge you therefore, as sales executives and engineers, whether your fields be residential, industrial or commercial, to acquaint yourselves fully with the industry's problems and intimately with the problems of your own companies, to sell yourselves to your fellow employees and to study closely this trend to gas that grows so strongly each day. By such well-rounded effort you can make the best contribution to the industry's problems and in so doing you will carry your full share of advancing our industry along the road to progress."

The attendance was approximately 200. Presiding at the several sessions were the following:

March 17, Commercial Gas, Morning Session, Karl Emmerling; Afternoon, Leon Ourusoff. At the General Sessions both the above also presided.

For the Industrial Gas Sessions, Morning and Afternoon of the 19th, Charles C. Eeles and W. Wirt Young presided.

The Industrial and Commercial Hall of Flame awards at the meeting were to the following:—

To past chairmen of Residential Gas Section.

Thomson King, Baltimore, Md.
E. J. Stephany, Pittsburgh, Pa.

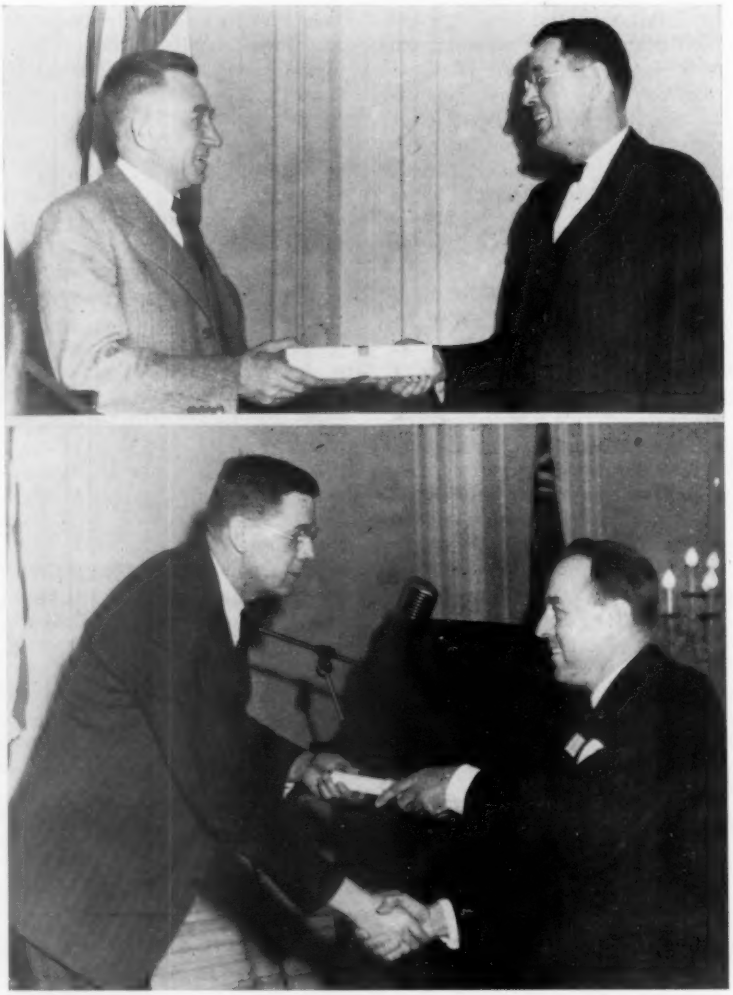
Those men who acquired all their points before 1935.

A. B. Greenleaf, Chicago, Ill.
F. X. Mettenet, Chicago, Ill.
Clarence E. Muehlberg, New York, N. Y.
Robert E. Ramsay, New Haven, Conn.
Hubert F. Rehfeldt, Chicago, Ill.
*** J. F. Weedon, Chicago, Ill.**

Those men who had 25 points or more before 1935 and have added some since.

Lt. Col. Arthur M. Apmann, Derby, Conn.
E. G. deCoriolis, Toledo, Ohio
*** C. H. French, Baltimore, Md.**
Hall M. Henry, Cambridge, Mass.
William M. Hepburn, Toledo, Ohio
Nils T. Sellman, Mt. Vernon, N. Y.
H. E. G. Watson, Toronto, Canada
W. Wirt Young, Waterbury, Conn.

Those men who had acquired some points after 1935 and with those they had before now qualify.



Above: Karl Emmerling (left) Chairman, Industrial and Commercial Gas Section, American Gas Association, presenting the traditional gavel to immediate past chairman, Harry A. Sutton, Public Service Electric and Gas Company, Newark, N. J., at the A.G.A. Sales Conference.

Below: Charles C. Eeles (right) Chairman, Committee on Heat Treating and Finishing with Gas receiving his Hall of Flame certificate from Harry A. Sutton at the A.G.A. Sales Conference.

Frank H. Adams, Toledo, Ohio
Donald A. Campbell, Cleveland, Ohio
Walter D. Crouch, Youngwood, Pa.
Lester A. Dubberke, Milwaukee, Wisc.
William H. Frick, Cleveland, Ohio
Ralph D. Hawkins, Bridgeport, Conn.
Louis H. Hungate, Jr., Houston, Texas
George S. Jones, Jr., Evansville, Indiana
A. V. Leudemann, New York, N. Y.
*** Ivar Lundgaard, Rochester, N. Y.**
*** Oliver Lloyd Maddux, New York, N. Y.**
John A. Malone, New York, N. Y.
James C. Patterson, Syracuse, N. Y.
C. B. Phillips, Toledo, Ohio
E. R. Rothert, Cincinnati, Ohio
Lawrence E. Wagner, Providence, R. I.
W. Stockton Walker, New York, N. Y.
Harvey C. Weller, Toledo, Ohio
Ray P. Wilson, Philadelphia, Pa.

Men who have now earned enough points since 1935 to qualify.

Don D. Beach, Atlanta, Ga.
Charles C. Eeles, Toledo, Ohio
W. M. Jacobs, Los Angeles, Calif.

Certificates presented for many years' contributions to Section activities.

C. George Segeler, American Gas Association, New York, N. Y.

* *Deceased.*

The Gas Industry "Down Under"

Issued in December, 1946, is the statistical report for 1945 of the National Gas Assn. of Australia. Gas sales totaled 27,860 million cubic feet. Meters in commission, 1,042,000. Some eighty-three tables in the report give analysis of operations by comparative years. The report includes New Zealand. All operations are coal gas.

P. C. G. A. Utilization Conference

FIFTY gas company representatives from five western states attended a two-day Utilization Conference of the Pacific Coast Gas Association's Technical Section, held February 26 and 27 in the form of morning and afternoon sessions in the auditorium of the Southern California Gas Co., Los Angeles.

G. J. Sandusky, utilization engineer, Southern California Gas Co., presided as conference chairman.

The discussion subject at the February 26 morning session dealt with new developments in gas appliances and appurtenances. A highlight of this session was a presentation of the technical features, present status of acceptance by gas utilities over the country, and the advantages and disadvantages, as currently known, of single point ignition for gas ranges.

This subject was presented by Guy Corfield, research engineer of the Southern California Gas Co.

Mr. Corfield first gave a definition of single-point ignition for gas ranges, declaring the problem of single point ignition resolves itself into a practical aspect for lighting the oven from the top pilot light. Under an efficient single point system, he asserted, there would be only one pilot light to provide service, and only one pilot light to keep going.

There must also be considered, he emphasized, the elevated temperature in the oven caused by a constantly burning pilot light. One advantage, he said, is that single point ignition makes the range entirely independent of electrical energy.

Among disadvantages of the single point ignition system, he declared, is the fact that long flash tubes must be used, having horizontal, curved or vertical members, which makes the flame move a comparatively long distance against an upward movement.

Gas air ratio to produce a flash downward would have to be very rich, he explained, because it has to be rich in order to produce a means of adequately flashing downward.

According to Mr. Corfield, an overall complication created by the odor tendency is that it appears necessary to have a mechanism to turn down or shut off the flash point medium after the ignition process in completed.

He declared that it has also been found necessary to use a safety pilot in order to assure that the main oven gas will not come in until the ignition point is ready for it. It has to be reasonably fast. Mr. Corfield said, in returning to "off" position after the burner has been lit.

One of the design difficulties, Mr. Corfield explained, is to design a long flash tube for the pilot light to the burner that will flash downward properly. In some instances, he reported, restrictions in the tube at certain points, or a form of baffle in the tube, will assist the operation.

It has also been found, he said, that if the tube is cut in two sections and the flash point is repeated in two stages at two flash ports, more positive ignition will result. He added that this, of course, causes additional complications.

Mr. Corfield reported that the present status of single-point ignition is that there have been several designs applied to various types of ranges, on a more or less extensive scale, and to some extent are in a semi-production status in the East.

Mr. Corfield mentioned other experiments that have been attempted with single ignition principles in field and laboratory tests. The Southern California Gas Co., he said, had conducted a poll of a number of utilities to determine their opinion of single-point ignition. Some replied that while a single point ignition appeared to "work" in theory, they had found difficulties, such as clogging pipes, ignition failure, and the fact that single point is a relatively expensive proposition and adds materially to the cost of the range.

Mr. Corfield's summarization of the status of single point ignition at present was to the effect that single point ignition appears to be a "good idea", that it seems to be practical for the eventual development of the all-gas operated range, but that it does not seem to be ready for large-scale production as yet.

J. H. Grayson of the Lowell & Grayson Mfg. Co., followed Mr. Corfield with a presentation of the trimatic valve, which he described as a complete control for water heaters. Mr. Grayson's son, Richard, next gave a technical and engineering description of the trimatic valve.

A. W. Beck of Grayson Heat Control, Ltd., discussed the Grayson Unitrol 'A' line of automatic shut-off devices and automatic clock control for gas ranges.

A two-fold presentation of the subject "Getting Appliance Servicing Information To and From Field Personnel," featured the February 26 afternoon session.

P. L. Speers, supervisor of employee training for the Southern California Gas Co., presented a talk on " A Dealer Installation Personnel Training Program," which is being used at present by the Los Angeles utility.

W. E. Otis, staff assistant, customers service department, Southern California Gas Co., then presented an outline of a proven employee suggestion and field observation program developed by the company.

The program, he explained, is keyed to the idea of encouraging employees to submit suggestions whereby operation and methods in their departments can be improved, simplified or replaced by more efficient procedures. The company, he declared, solicits suggestions for improvements on such varied divisions of activities as tools and materials, servicing policy and methods, safety, and general service.

Otis then outlined the system that has been developed under which suggestions are investigated on an impartial basis through the Southern California Gas Company's standards section of the customer service department, and then forwarded, with the findings, to the operating manager's staff for recommendation.

The master discussion subject at the February 27 morning session concerned causes and correction of pilot and control stoppages. This program was opened by a joint presentation of problems and field experiences with pilot and control stoppages, involving natural gas, by E. J. Cordray, F. A. Graxton and Allen Johnson, district foreman of the Southern California Gas Co.

Nathan H. Gellert, Jr., Seattle Gas Co., Seattle, Wash., followed with a discussion of pilot and control stoppages involving the use of manufactured gas.

The final discussion in a trilogy pertaining to pilot stoppages supplemented by suggested remedies, was led by K. C. Edson, C. E. Lee and J. L. Oberseider of the Southern California Gas Co.

The February 27 afternoon session was devoted to open discussion of general utilization problems and practices, which were introduced by presentations by Virgil Jury, utilization department assistant of the Southern Counties Gas Co., on "Auxiliary Gas Supply to Customers During Transmission Line Shutdown," and J. A. Reade of the same company on "Problems in Giving Unmetered Gas Service."

Mid-West Regional Gas Sales Conference

MORE than 600 members of the gas industry were in attendance at the first post-war regional gas sales conference of the Mid-West Sales Council, held under the sponsorship of the Residential Gas Section of the American Gas Association at the Edgewater Beach Hotel, Chicago, March 17 and 18.

A splendid program was arranged by Co-ordinator H. D. Valentine The Peoples Gas Light & Coke Company, Chicago, and his committee.

J. C. Sackman, Northern Indiana Public Service Company, Chairman of the Council, presided at the Monday meeting. Mr. Sackman in welcoming the group, pointed out several of the many factors upon which gas sales people can cash in during the coming months.

Bennett S. Chapple, Jr., assistant sales vice-president of United States Steel Corporation, was the keynote speaker of the conference. Mr. Chapple told the Council of the opportunity for salesmen to contribute to the well-being of the country. Production is not the key to all of the nation's problems, he said. Unless the output is sold, bloated inventories and sales price reductions can darken the economic picture. He declared it is more important for a manufacturer to own a market than a mill.

Commenting on estimated steel production, Mr. Chapple said steel ingot capacity had been increased to approximately 92 million tons, a gain of about 15 per cent over pre-war capacity. Steel sheet and strip production, which is of specific interest to appliance and equipment manufacturers, he pointed out that the mills had a capacity of 16 million tons of sheet and strip steel before the war. Despite production capacity increases during the war, the industry had produced only 14 million tons in 1946 because of strikes and work stoppages in steel mills and in allied producers' plants. The industry plans on production capacity of 19 million tons when all new facilities come into operation, late this year or early next year, barring further labor troubles.

Distribution of this output still posed many problems, the speaker said. Even with the lifting of CPA restrictions, the National Housing Authority would demand priorities for veterans' housing, the canning industry would need sheet and tin plate for canning perishable foods for destitute countries, freight car shortages demanded channeling steel into that field of production. All of these he indicated would be competitors with the gas industry in obtaining deliveries of steel.

F. X. Mettenet, Vice-President, The Peoples Gas Light & Coke Company, spoke on the relations of dealer-manufacturer and gas utility companies. He said that any sales plan should contain three fundamentals: Raising the quality of the product; control of that Quality; and seeing that the quality as well as the quantity of the product was increased each year. The utility company should take the lead for the manufacturer and the dealer in any market and should know its market thoroughly.

Harold E. Jalass, general sales manager, Cribben & Sexton Company, completely destroyed the illusion of the Big, Bad Wolf of competition from competitive fuels. Using printed statements of competitors as a basis of comparison, Mr. Jalass, in a dramatic and entertaining sales demonstration, proved that gas can perform all of the operations of cooking better, cheaper, while leaving kitchens cleaner and cooler.

H. Carl Wolf, Managing Director of the American Gas Association, outlined the many activities being carried on at the Association that were specifically designed to aid the members of the council in creating more sales of gas and gas appliances. Predicting a great advancement throughout the entire industry, Mr. Wolf told of the serious responsibility that rested on the shoulders of members of the Council and the other sales representatives of the industry. He was followed on the program by Wallace M. Chamberlain, sales manager, Michigan Consolidated Gas Company, and Chairman, Residential Gas Section, A.G.A. Mr. Chamberlain brought to the Council, a brief but illuminating report on the activities of the Residential Gas Section, and the part it played in aiding sales of gas and gas appliances.

Bernard T. Franck, Vice-President, Milwaukee Gas Light Company, spoke on the subject of decentralization. From his own experiences in endeavoring to prevent the creation of blight areas in Milwaukee through the too-rapid expansion of fringe and rural building developments, Mr. Franck was able to point out ways by which utility companies could help in the improvement of housing conditions in their own cities, which not only would be civic contributions, but also would profit the utility company through reducing distribution and transmission costs.

B. H. Wittman, domestic sales manager, The Peoples Gas Light & Coke Company, and chairman-elect of the Council for 1948, served as Chairman for the second day of the Conference. Participating as the opening speaker, E. Carl Sorby, Vice-President, George D. Roper Corporation, sold his audience thoroughly on the CP Range promotion, of which Mr. Sorby is chairman. In his usual dramatic presentation, Mr. Sorby told the story of automatic cooking on automatic CP gas ranges. He left no doubt in the minds of his audience as to the superiority of gas ranges over all competition.

H. Vinton Potter, New Freedom Gas Kitchen Director for the A.G.A. carried the gas appliance story a step farther, through his presentation of automatic gas appliances in glamorous settings in New Freedom Gas Kitchens. Helen Kirtland, Home Service Director, The Ohio Fuel Gas Company, posted the Conference on the newest developments in Home Service Work by describing types of visits and objectives attained by home service girls in the industry.

William C. Gordon, market and research analyst, Curtis Publishing Company, delivered an illuminating talk on sales prospects of the gas industry, stressing the trend from a sellers to a buyers market, as indicated by desires of consumers for labelled and nationally advertised merchandise.

Miss Rebecca Sullivan, Home Service Director, The Gas Service Company, Topeka, gave an effective demonstration of the fourth zone of cooking as exemplified in the low-pressure steam cooker developed by the Kansas City Gas Company and the Vendo Company, and currently being included in domestic gas ranges by several of the leading manufacturers.

Monday's conference session was brought to a close by a timely educational production staged by R. J. Caniff, advertising and sales promotion director, Servel, Inc., and his cast of seasoned troupers.

Individual Gas Fired Air Conditioners Are Featured In New St. Louis Shopping Center

By

James Kearns

Air conditioner unit installed at Harmony Shop

INDIVIDUAL Servel gas air conditioning for 110 retail shops is being installed in the gigantic Hampton Village Shopping Center at Hampton and Chippewa Boulevards, St. Louis, Missouri.

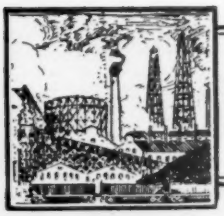
The 14 square block shopping center has been laid out by Boulevard Frontage Company, St. Louis Realtors, to give suburbanites a more convenient place to shop without undergoing the long trip into the congested downtown district. Begun 18 years ago, the shopping center had completed two buildings before the war, and has five more under construction at present. Close by the wealthier western and suburban districts of the city, where much of the population has shifted to the west, the Hampton Village will offer parking space for 2500 cars, and 110 retail shops, including everything from food stores to medical centers, cocktail lounges, music shops, theatres, and the world's largest supermarket.

Everyone of the 110 shops will be completely air-conditioned, winter and summer, utilizing five-ton Servel package gas conditioners which have been engineered for the specific needs of each shop by Laclede Gas Light Company of St. Louis, and Servel, Inc., of Evansville, Indiana. Negotiations for the purchase of the gas-fired units began several years ago when it was decided that a central air conditioning system would not suffice, due to the individual nature of the shops. Several types of package multiple units were tested before Harry Brinkop, head of Boulevard Frontage Company, signed for the gas-powered equipment. Some 22 of the units have already been installed, each engineered for a specific job by M. A. Disney, head of the air conditioning department of Laclede Gas Light Company, and D. J. Fagin, assistant to the salesmanager of the same utility. Slight differences in ductwork and unit housing were built in according to the need, so that the florist who must maintain an overall lower temperature, for example, may do so by merely setting the thermostatic control on the wall of his shop. Each of the five-ton Servel units is over-capacity for summer and winter use, and will maintain a guaranteed comfortable 80 degrees the year around, even in St. Louis' notoriously hot summer weather. Due to the use of pre-built ductwork in the buildings, it required only a few hours to install a unit and put it into operation.

One of the many buildings in the Shopping Center

The air conditioning department of the St. Louis utility gave the Hampton project substantial publicity by erecting a model of the entire project in a downtown window display. Individual air conditioning will be widely featured in the center's advertising plans for the future.

The project was conceived by Mr. Brinkop several years ago and the central building was completed before the war. Since the end of hostilities, eleven buildings costing in excess of $11,000,000 are being constructed.



News of the Gas Industry

Annual Convention A.G.A. To Be At Cleveland, Ohio

The Executive Board of the American Gas Association announces that the 29th Annual Convention of the Association will be held October 6, 7, and 8, 1947 at Cleveland, Ohio.

The 1946 convention last Fall voted for San Francisco as the next convention city. All indications point to a large attendance at the 1947 convention which under present circumstances would tax the hotel facilities in San Francisco and result in insufficient hotel reservations to accommodate the members of the Association.

After careful consideration of all factors involved, the Executive Board of the A.G.A. meeting in Boston on March 21 thought it advisable to postpone the San Francisco meeting and voted to hold the 1947 conference at Cleveland.

Natural Gas Department Spring Meeting

Regulation and conservation will be the theme of the annual spring meeting of the American Gas Association's Natural Gas Department at the Stevens Hotel, Chicago, April 30—May 1.

A comprehensive, well-timed program has been developed by a committee under the chairmanship of Floyd C. Brown, president, Natural Gas Pipeline Company of America, Chicago, and the following committee members: A. F. Bridge, vice-president and general manager, Southern Counties Gas Co., Los Angeles; Gardiner Symonds, president, Tennessee Gas and Transmission Co., Houston, and C. H. Zachry, president, Southern Union Gas Co., Dallas.

Two morning general sessions will be devoted to discussion of problems of management by leaders in their fields. A.G.A. President Hargrove will touch upon important developments in Association activities and the industry's problems in holding its advanced position in the fuel markets of the future.

Timely discussions will be held on Well-Head Price Fixing with the present conflict of jurisdictions. The future of the house heating load will be handled by a panel of experts. The conservation problem will be discussed by the chairman of the Interstate Oil Compact Commission, and Flare Gas Wastage by the chairman of the Texas Railroad Commission.

In conjunction with pipe line operations the matter of Underground Storage will be presented by a committee to show the growth of this type of reserve capacity and present-day operations of the systems.

The present status of research developments within the natural gas industry will be presented by the chairman of the A.G.A. Technical and Research Committee, and a special treatment of a project on Pipe Line Flow research will be presented by a representative of the Bureau of Mines.

Afternoon sessions will be devoted to open meetings of the A.G.A. Transmission Committee with a program covering important engineering and technical developments. The A.G.A. Accounting Committee will meet in an open session to discuss accounting problems peculiar to the natural gas industry.

Robert W. Hendee, second vice-president of the Association and chairman of the A.G.A. Natural Gas Department, will preside at the general sessions.

Gas Technology Short Course

A second annual Short Course in Gas Technology will be offered at Texas College of Arts and Industries, Kingsville, May 27-30.

Procedure of the course will be similar to last year's conference, which attracted more than 200 industrialists from ten states. Facilities of the A&I natural gas laboratory as well as inspection trips to installations near Kingsville, situated in the heart of the Coastal Plain region, will again be available to the registrants.

Two sections of study have been announced by Dr. Frank J. Dotterweich, head of the A&I engineering department, who is again serving as chairman of the administrative committee.

"Technical Problems in Transmission" is the subject of the first section, which will be headed by R. M. Hutchinson, research director of the Houston Natural Gas Corporation. W. C. McGee, Jr., of the Tennessee Gas and Transmission Co., Houston, is vice-chairman of the transmission section. The other will be "Technical Problems of Gas Utilization," arranged by George Elmer May, principal utilization engineer for New Orleans Public Service, Inc. C. A. McKinney of the United Gas Corporation, Houston, is assisting May.

Instructors will be research experts, industrialists, and A&I faculty members.

Acting once more as sponsor for the course is the Southern Gas Association, whose managing director, Robert R. Suttle, is again a member of the administrative committee.

An advisory committee from industry is being appointed by President E. N. Jones of A&I.

An all-day inspection trip to the Rio Grande Valley is on the schedule. Arranged with the co-operation of the Weslaco Chamber of Commerce, the tour will include visits to natural gas cycling plants and dehydration plants. In addition, there will be a barbecue at Progresso, south of Weslaco on the Mexican border. Ed Slaughter, manager of the chamber of commerce, is planning the trip.

An opportunity to visit the headquarters of the vast King Ranch, on the outskirts of Kingsville, will again be offered the delegates. Last August highly-bred horses, including Bold Venture, sire of Derby-winning Assault, were exhibited.

Frank Johnson, district manager of the Houston Natural Gas Corporation, is chairman of the local arrangements committee for the second time. He has announced another "Texas Barbecue," to be given by the Kingsville Chamber of Commerce, managed by Carruth Palmer.

Public Service Electric and Gas Company Announces Promotions in Personnel

Changes in organization in the gas department of Public Service Electric and Gas Company, in connection with the retirement on pension March 1 of Herbert H. Ferris, general manager, are announced as follows by President George H. Blake:

Robert H. Philipps, Jr., to be general manager; Otto Reiner to be assistant general manager; Henry W. Nicolson to be general superintendent of gas distribution.

Mr. Philipps, Jr., has been with Public Service in the gas department since July, 1911. He started with the company in the Hudson Division where in 1925 he was made engineer of gas manufacture. Two years later he was transferred to Essex Division in the same capacity. In 1938 he was promoted to assistant general superintendent of gas manufacture and six years later to general superintendent of manufacture. He has been assistant general manager of the company's gas department for the past two years.

Mr. Reiner has been with Public Service, in the gas department, since July 1, 1910. After various assignments in the Essex Division of the department, he was made superintendent of distribution in the Orange-Montclair District in 1916. Three years later he was named engineer of manufacture and distribution for the Passaic Division; in 1938, assistant general superintendent of distribution, and in 1944, general superintendent of distribution.

After graduation from Stevens Institute of Technology in 1917, Mr. Nicolson started in the gas business as a cadet engineer with the Seaboard By-Products Coke Company, a division of Koppers Company. His first assignment with Public Service was in the gas manufacturing end of the business at the Market Street Works in Newark. He was transferred to the distribution department in 1921 and later that year was made superintendent of distribution for the Summit-Morristown District.

CONVENTION CALENDAR

April

14-16 *Distribution and Motor Vehicle Conference,* Hotel Cleveland.

14-16 *G. A. M. A. Annual Meeting,* Drake Hotel, Chicago.

16-18 *Southern Gas Association,* Biloxi, Miss.

25-26 *Gas Meters Association of Florida-Georgia,* Boca Raton, Florida.

30-May 1 *A. G. A. Natural Gas Department,* Annual Meeting, Stevens Hotel, Chicago.

May

5-9 *A. G. A. Industrial Gas School,* Hotel Seneca, Columbus, Ohio.

12-16 *A. G. A. Commercial Gas School,* Washington, D. C.

15 *New England Gas Association,* Operating Division, Hotel Sheraton, Worcester, Mass.

15-16 *Indiana Gas Association,* French Lick Springs Hotel, French Lick.

20-22 *Pennsylvania Gas Association,* Wernersville, Pa.

22-23 *Canadian Natural Gas and Petroleum Association,* Royal Connaught, Hamilton, Ontario.

27-29 *Liquefied Petroleum Gas Association,* Hotel Sherman, Chicago.

June

2-4 *Joint Production and Chemical Committee Conference,* Hotel New Yorker, N. Y.

9-11 *Canadian Gas Association,* General Brock Hotel, Niagara Falls, Ontario.

23-24 *Residential Gas Section,* New York-New Jersey Sales Conference, Essex and Sussex Hotel, Spring Lake, N. J.

July

7-8 *Michigan Gas Ass'n,* Grand Hotel, Mackinac Island, Michigan.

September

23-25 *Pacific Coast Gas Association,* Hotel Del Coronado, San Diego, Cal.

October

6-8 *American Gas Association, Annual Convention,* Cleveland, Ohio.

Standard Oil Development Co. Research Personnel

To help meet the requirements of an expanding research and development program, Standard Oil Development Company, central technical and research organization of Standard Oil Company (New Jersey), announced in January the election of three new vice presidents and directors.

The new officers, who increase the number of directors to 14, are Willard C. Asbury, who will be in charge of contract and patent activities, and E. Duer Reeves and Dr. William J. Sweeney, who will direct the company's work in research and development. Simultaneously, it was announced that William R. Carlisle, a vice president and director of the Development Company, has been appointed associate general counsel of Jersey Standard. In addition to his new duties, he will remain a director of S. O. D.

Extension of Gas Service in Arkansas

Natural gas may be available in several Arkansas cities and towns now without such service, as a result of the Mississippi River Fuel Corporation's announced expansion program, members of the staff of the Arkansas Public Service Commission stated last week.

The company announced at St. Louis that it has applied to the Federal Power Commission for authority to undertake a $10,200,000 expansion of its natural gas pipelines to St. Louis, in addition to an $11,574,000 expansion approved last September, which has been delayed in execution because of steel pipe shortages.

Arkansas officials said the company's line to Mississippi passes through Arkansas and that the company sells gas to the Arkansas Power and Light Company and the Arkansas-Louisiana Gas Company for resale in several Arkansas municipalities.

Consumers Power Company Serves Nation's Largest College Housing Project With Natural Gas

Natural gas was selected for use in the nation's largest college housing project now under way at Michigan State College. Enrollment at the college, located in East Lansing, has soared from 3,875 in 1943, to over 13,000. By spring, enrollment is expected to exceed 17,000.

With the completion of this large housing project, 12,000 people will be residing in college-operated facilities of all types. There will be 11 permanent apartment buildings containing 184 units for married veterans and their families and 12 permanent dormitories housing 6,300 single students. Each dormitory will contain a dining hall and an all-gas-equipped kitchen. These dining halls, together with two completely gas-equipped cafeterias, will serve over 24,000 meals a day.

One portion of the Michigan State College Housing Project is titled "Married Veterans Temporary Housing Project." Three hundred and fifty former army barracks buildings are being converted into units, which will provide 1,148 apartments for the veterans and their families. While this project is temporary, it is expected to be used for at least 10 years and probably longer. For this reason, they will be greatly improved over the usual barracks type of construction. Each apartment will contain a living room, bed room, bath, kitchen and closet space. Each kitchen will be furnished with an apartment-type gas range and a 20-gallon automatic gas water heater.

Since the problem of planning the gas distribution system contained few unknown quantities, an "ideal system" was designed to furnish the best possible service at the lowest capital investment cost. Because of the scarcity of materials, however, ideal pipe sizes could not be furnished and various pipe sizes other than those specified in the original plan were used in order to complete the project.

The distribution system supplying gas to these 1,148 apartments is an intermediate pressure system consisting of two and a half miles of mains and eight miles of services. The system is connected at three points to the Consumer Power Company feeder main. At each of these three points a regulator and master meter are located to reduce the pressure to the system and to measure the quantity of gas the college purchases.

Airplane view of Veterans Housing Project. A portion of the 350 barracks are to be converted into 1148 apartments, all equipped with natural gas.

Sales Center in Oklahoma City

After 10 months of preparation, Cullen Lumber Co. in Oklahoma City opened on March 10 what is believed to be one of the most modern and unique home appliance and supply centers in the country.

Housed in 10,800 square feet of actual display space, surrounded by clear plate glass 12 feet high and sloped at a 7-degree angle to prevent refraction, will be a shopping center where prospective customers will see in actual operation all appliances and radios offered by the store.

In each of three model kitchens, home economists will offer continuous demonstrations of food preparation and appliances. The radio display booths have 86 electric outlets, the lamp display 74 outlets and the small appliance booths 74 outlets. Every 10 feet on the main display floor has two 110-volt outlets and one 220-volt with gas, water and waste so that all appliances, large and small, can be in full operation.

In addition to the appliance displays, there is a complete paint department for home owners and contractors and a complete tool department as well. In addition, the company will operate its contract division for home builders, contractors and professional groups. The lumber division will be continued as usual and will include all materials needed to build a complete home.

Cullen Lumber Co. is one of Roper's leading dealers.

Roberts & Mander Appoints J. H. Emery Vice President

Roberts & Mander Corporation of Hatboro, Pennsylvania, makers of Quality Ranges and Quality Steel Kitchen Cabinets, has announced the election of John H. Emery as Vice President and Sales Manager. This action was taken at a Directors' Meeting held on February 25, following the Annual Stockholders' Meeting held on the same date. W. B. Eckenhoff will continue as Assistant Sales Manager.

Mr. Emery was formerly manager of the New York office, but has transferred his activities to the home office at Hatboro to assume direction of the Company's selling and marketing program. He succeeds R. S. Agee, who has entered the manufacturers' agency business.

John H. Emery
Affiliated Photo—Conway

Denver Public Service Adds to Staff of Dealers and Builders Dept.

The Public Service Company of Colorado, Denver, established the Dealers' and Builders' department in 1942 under the supervision of Roy G. Munroe. It is now being expanded and personnel assigned to work more closely with dealers, builders, architects and distributors to assist them in selling more gas and electric equipment.

Shad J. Tinsley has been named Supervisor of Gas Dealers' Representatives. Shad and his men will contact all gas appliance dealers, jobbers, plumbers, heating contractors and furnacemen to aid them in the sale of gas equipment which will use our gas service in the manner most beneficial to the customer.

A. A. Roebke will serve the architects and building contractors. He will be known as Supervisor of Architects' and Builders' Representatives. He and his men will supply information and other helps to architects and builders who specify gas and electric equipment for new and remodeled buildings, or will put them in touch with the proper department within the Company.

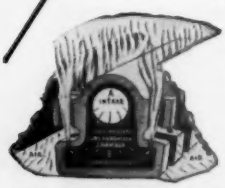
Henry D. Taylor has been appointed Plumbing Contractors' Representative. He will call upon the plumbing contractors, seeking to serve and assist them in every way possible. Mr. Taylor has made an enviable record in Denver, having sold automatic water heaters for a period of over twenty years.

A. Roy Moore has been appointed Heat-

COLUMBIA
LITTLE GEM
GAS BURNER

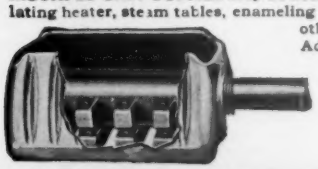
For Home Heating and Many Industrial Uses

Adaptable for Natural or Manufactured Gas



Just the burner for present day conversion. You can handle any job, domestic or commercial, with Little Gem. Easy to install. Minimum service required. Gives complete combustion without premixing.

MULTIPLE UNIT BURNER may be hooked up in series to fit any type circulating heater, steam tables, enameling ovens, galvanizing tanks and many other applications. Write for circular. Address Department 10.



18 Years Manufacturing Gas Conversion Burners for Domestic and Commercial Use.

THE COLUMBIA BURNER CO.
729 Ewing Street • Toledo 7, Ohio

CLEVELAND

"A" TYPE METERS
"B" TYPE METERS
DIAPHRAGMS

Cleveland Gas Meter Co.
ESTABLISHED 1875
2009 Rockwell Ave., Cleveland 14, O. Phone CHerry 2351

GAS PLANT EQUIPMENT
UGI REFINERY GAS REFORMING PROCESS
UGI NATURAL GAS REFORMING PROCESS
UGI HEAVY OIL PROCESS
GAS DISTRIBUTION
PIPE LINE CONSTRUCTION
THE U.G.I. CONTRACTING COMPANY
A DIVISION OF
UNITED ENGINEERS & CONSTRUCTORS INC
NEW YORK PHILADELPHIA CHICAGO
MAXIMUM RETURN TO CLIENT PER DOLLAR EXPENDED

ing Contractors' Representative for the Public Service Company of Colorado. He will call upon the heating contractors. Mr. Moore has a splendid record with the Company, having sold gas appliances and house heating equipment over a period of nearly twenty years.

Dr. Goerg Resigns from Post With American Radiator Corp.

Dr. Bernard Goerg has announced his resignation as Director of the Institute of Thermal Research of the American Radiator & Standard Sanitary Corporation. He entered the services of the American Radiator Company in 1925 and for the past 11 years, as Director of the Institute of Thermal Research, was in charge of the designing and engineering of all the corporation's heating products, including boilers, gas and oil burners, air furnaces and conditioners for various types of fuels.

After a short rest at his home, in Bronxville, New York, he intends to re-enter the manufacturing business.

Dr. Bernard Goerg

Rockwell Declares Dividend: Names Rockwell, Jr., President

At the Annual Meeting, March 3rd, of Rockwell Manufacturing Company, Pittsburgh, Pa., the board of directors elected W. F. Rockwell, Jr., President. Mr. Rockwell formerly served as Vice President and General Manager.

W. F. Rockwell Jr.

Colonel Willard F. Rockwell, who has been both President and Board Chairman, will retain the office of Chairman of the Board. All other officers were re-elected.

The Directors have voted a dividend of 10 cents a share on common stock payable March 5, 1947, to shareholders of record as of February 21, 1947.

Emco Copper Clad Meter

The Pittsburgh Equitable Meter Division of Rockwell Manufacturing Company has started volume production of types 5-150 and 5-200 sheet steel gas meters protected with copper cladding.

Copper clad metal is described as a better-than-tin plate development. It is made by inseparably bonding sheets of copper to heavy gauge, low carbon steel under tremendous heat and pressure. The specifications call for two outer layers of pure copper, 10% on each side, that protect the sheet steel accounting for 80% of the cross-section area.

The thick coating of copper eliminates porosity troubles common to plated materials and rust is stopped in its inception. Copper clad sheets cut, form and draw as readily as low carbon steel. The formed parts are assembled using regular composition solder and flux.

Cribben and Sexton Co. Elects New Officers

At a recent meeting of the Board of Directors of Cribben & Sexton Company, manufacturers of Universal Gas Ranges, William M. Hillborn was elected President succeeding George D. Wilkinson, Sr., who retains the position of Chairman of the Board. Thomas H. Heneage was elected Vice Chairman of the Board, and Sidney R. Hill was named Controller. George D. Wilkinson, Jr., Secretary of the Company, was also made a member of the Board of Directors. Wendell C. Davis was re-elected Vice President and Treasurer.

W. C. Wilkinson has been appointed Purchasing Agent, succeeding Carl E. Lyon, who retired the first of the year.

Natural Gas in Argentina

Natural gas will account for 82 per cent of all gas consumed in Argentina by the end of 1951, according to the five-year plan announced for the gas industry. At present most of the gas consumed is manufactured from imported coal. The plan calls for construction of a gas pipe-line from the oilfields at Comodoro Rivadavia to Buenos Aires by 1949. Bids have already been invited. It also provides for a total expenditure of 271 million pesos, an increase from 330,000 to 700,000 in the number of gas consumers, and a reduction in the price of gas from 27 cents to 15 cents per cubic meter.—(*U. S. Dept. of Commerce*).

Conlon-Moore Corporation

Conlon-Moore is the new name of the Moore Corporation of Joliet, Ill., with which Conlon was merged February 26.

Bernard J. Hank, president, and other officers have been elected as follows: Louis R. Peyla, Joliet, vice-president; I. N. Merritt, vice-president and general manager, Conlon Division, Chicago; Harry T. Worthington, vice-president and general manager, and John M. Foxx, vice-president in charge of sales, Moore Division, Joliet; J. J. Hank, vice-president and general manager, Dickinson-Brighton Foundry Division, Chicago; Herbert H. Kennedy, secretary.

Bendix Appoints Miss Doughty

Miss Margaret B. Doughty, home economist and educator, has been appointed director of Bendix Home Laundry Institute at South Bend, Ind. She succeeds Miss Edwina Nolan, who retired recently.

A leader in the field of home equipment, Miss Doughty joined Bendix Home Appliances, Inc., after serving as head of the household equipment department in the college of home economics, Washington State College.

CRUSE-KEMPER COMPANY
AMBLER, PENNA.
GAS HOLDERS
Low Pressure High Pressure Inspection
Purifiers Tanks Flues
Over 40 Years of Sound
Steel Plate Construction

"Gild" Breakfast

As usual, where gas men are holding a meeting the Gild of Ancient Supplers also convenes. They held a breakfast meeting at the Statler Hotel, at 7:59 A.M. March 20th. Twenty-three supplers attended. The meeting was presided over by Warden George P. Velte. After a brief talk by J. A. Mulcare, Mayor, several subjects of interest to the Gild were discussed.

German Coking Process Report

Known as the Krupp-Lurgi process, this method was used in two commercial installations, one in Germany and one in the Saar, to produce low-temperature coke for household and industrial use.

Technical information on the process was obtained by members of the Solid Fuels Mission to Germany investigating wartime developments in coal mining, preparation, and utilization.

The Bureau of Mines report gives a comparison of investment and operating costs for high-temperature coking and low-temperature coking by the Krupp-Lurgi process along with construction details of equipment used in the latter method.

Copy of Information Circular 7395, "Low-Temperature Coke by the Krupp-Lurgi Process," may be obtained by writing to the Bureau of Mines, Department of the Interior, Washington 25, D. C.

E. E. McEwan

McEwan Appointed to Sales Post for Estate-Heatrola

Appointment of E. E. McEwan as Eastern Sales Manager has been announced by Cecil M. Dunn, General Sales Manager of the Estate-Heatrola Division of Noma Electric Corporation, manufacturers of Estate cooking and heating equipment and Estate home and farm freezers.

Mr. McEwan will direct operations out of its executive offices in New York City.

Booklet Explains Reasons for Curtailment of Industrial Gas Service

Southern California Gas Co. and Southern Counties Gas Co., of Los Angeles, have collaborated in the preparation, for distribution to industrial gas users, of a booklet designed to explain the apparent contradictions in the industrial gas situation which have made it necessary to curtail industrial gas service in an area long known for its large-scale production of oil and gas.

In the foreword, the two utilities offer to submit for examination the facts about the present and future outlook and to study the effect of the natural gas pipeline from Texas to Southern California which is now under construction. It explains that several important factors must be considered in arriving at any conclusion about the future of natural gas for Southern California, which factors are outlined in the booklet issued in mid-January.

On the first page the companies emphasize that their basic job is to supply the gas needs of more than 1⅓ million customers for domestic, commercial and essential industry gas. This statement is followed by a laymen's definition of the terms "firm" gas and "curtailable" gas service. The point is stressed that curtailable, or surplus, gas service is secondary to firm gas service, and is furnished only when the supply of gas from oil wells is more than is needed by firm customers, and when, at the same time, the full capacity of gas pipelines is not required to meet firm demands.

From a practical standpoint, the booklet explains, the use of curtailable gas applies to less than 2,000 large industrial consumers in Southern California.

Figures submitted indicated that the percentage increase in the number of gas customers (meters) kept pace with the extraordinary growth in the population of Los Angeles County since 1930; and that an even sharper rise in the meter trend may be expected as new homes are completed from now on. The county's population in 1930, it was explained in the booklet, was approximately 2¼ million, compared to nearly four million in 1946. Statistics were presented to show that whereas the percentage increase in the average use of gas per customer in 1930 was 100%, in 1946 it was in excess of 150%.

Two basic reasons were given for the more frequent and prolonged cutbacks of industrial gas service:

(1) There has been a great increase in the demand for firm gas service.

(2) There has been a reduction in the amount of gas available from California sources.

As a contributing factor to the shortage making curtailment of surplus supplies necessary, the companies cited that for each of the five years beginning with 1938, gas used for repressuring in California averaged substantially less than 100 million cubic feet per day, but by 1946 was nearly 300 million cubic feet per day. It was also pointed out that gas available to the two gas companies from oil wells had decreased from a daily average of 507 million cubic feet in 1944 to 440 million cubic feet in 1946.

The rate of oil production and resulting natural gas was increased during the war because of the tremendous fuel need for Pacific war operations. Since V-J Day, however, rate of oil production, and the amount of accompanying natural gas, has been reduced.

"In addition, the oil producers are pumping back underground more gas than previously in order to repressure fields. This repressuring is a farsighted conservative measure designed to maintain underground gas pressure which, in turn, increases ultimate production of oil. Much of the gas so used will be recovered eventually. It is unavailable to our systems for the present and near future and the current trend of oil-well gas deliveries to our companies is downward."

IRON OXIDE

For purifying Manufactured Gas. How many tons do you need for Summer delivery?
I dig out Oxide during winter and spring, for summer shipments, but must know your requirements now.
Write at once
William Vennes, Grand'Mere, P.Q., Canada

THE GOODMAN STOPPER

Now has the "Z" handle for easy manipulation. When locked in place it holds. Stopper cannot slip. Gas cannot pass. Adjusted in 30 seconds.

Ask for circulars on this and other distribution equipment.

Nearly a half century of service to the Gas Industry.

The Reliable Shut-Off for Street Mains

Safety Gas Main Stopper Co.
523 Atlantic Avenue, Brooklyn, New York

Gas Appliance Training Course for Plumbers

More than 400 master plumbers and journeymen plumbers from all parts of Westchester County are enrolled for a course on gas appliance installation being conducted by Westchester Lighting Company in its service building, White Plains, New York. The company's inspectors are also included in the classes which are conducted for a total of six hours—two hours a day on three successive days. Plumbers and company inspectors attend classes on their firms' time.

Only six students at a time may take the course which is designed to give individual instruction. The school operates eight hours a day, thus clearing approximately 24 students every three days.

One of the aims of the course is to promote the highest degree of co-operation between Westchester Lighting Company and the County's plumbers and appliance dealers.

The practical side of the course consists in lectures and demonstrations on the selecting of gas burners, converting boilers and furnaces to gas heat, selecting proper size of pipe, fitting burner to boiler, running flues, "gassing out," turning on gas and setting burners to proper input. The safety pilot and how it works is also a feature, as well as the purpose of various controls. Tests of many kinds are also demonstrated.

The laboratory consists of a complete layout of pipe from "curb" to appliances, including gas meter and various makes of ranges, water heaters, refrigerators, conversion burners, thermostats and other controls. The elements of combustion are demonstrated with equipment especially designed for this purpose.

At the completion of each course, it is pointed out that Westchester Lighting servicemen will continue to be available to instruct plumbers in starting, initial adjustment and service on gas appliances. All work is demonstrated in conformity with the requirements of local building codes and other authorities having jurisdiction, and the specific instructions of individual manufacturers of appliances are carefully followed. A pamphlet containing helpful suggestions along these lines is issued to each student. Plumbers who have taken the course are enthusiastic about it and the opportunities offered for closer co-operation with the lighting company.

—Around the System, March, 1947

48-Year-Veteran Retires from Harrisburg Gas

George B. Bains, Manager Operating Department, the Harrisburg Gas Company, Harrisburg, Pa., since March, 1922, recently retired. He is succeeded by Richard L. James, who was Assistant Manager, Operating Department.

Announcement of Mr. Bains' retirement and the appointment of Mr. James was made by Leonard B. Richards, President of the Company.

Mr. Bains, a veteran of over forty-eight years in the gas industry, has the longest service record of any employee with the company and its affiliates.

Ralph D. Holcomb

Holcomb New P&H Sales Manager

Harnischfeger Corporation of Milwaukee has announced the appointment of Ralph D. Holcomb as General Sales Manager. He will direct the sales of all P&H products, excavators, road machinery, hoists, cranes and welding equipment.

Mr. Holcomb's elevation to his new post follows 18 years of continuous service with the P&H organization, his latest position being that of District Manager for the San Francisco territory.

Have you considered a
CHECK-UP
of
GAS PLANT PERFORMANCE
Investigations and Reports by Qualified Engineers
CURRAN CARBONIZING and ENGINEERING CO.
314 North Broadway St. Louis 2, Mo.

For Real Gas-purifying Power
CONNELLY IRON SPONGE

• To get top efficiency in gas-purification at the lowest cost, use Connelly Iron Sponge. It's the finest purification material to be had.

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For Steel Hot Water Storage Tanks
Rust NO LONGER A *Must!*

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PATENT APPLIED FOR
The Cleveland Heater Co.
2310 Superior Ave. Cleveland 14, Ohio

CLEAN, RUST-FREE HOT WATER AT LOWEST EQUIPMENT COST

Oklahoma Utilities Assn.

The 29th Annual Convention of Oklahoma Utilities Association was held March 20 and 21 at Tulsa, Okla.

Three sessions, presided over by S. I. McElhoes, president of the Association were held in the exhibit room of the Tulsa Hotel and the Convention Dinner following the first day's sessions.

Addresses were given by Will C. Grant, L. A. Crittenton, Robert H. Dott, W. H. Stueve, Davis M. DeBard, Steve Stahl and John Rogers.

Lone Star Gas Company Announces Appointments

Appointment of L. T. Potter to the newly created position of Assistant to the President, was recently announced by President D. A. Hulcy. Mr. Potter will assist the president in duties affecting all branches of the company. He was formerly superintendent of production and assistant general superintendent of the company's transmission division.

Concurrent with this appointment was the announcement made by Elmer F. Schmidt, vice-president in charge of Transmission Division, of three other personnel changes. The men named will be under the direct supervision of Julian L. Foster, general superintendent.

In these changes, Thomas S. Bacon, research engineer, has been promoted to chief engineer; Richard A. Minter, office engineer, to assistant chief engineer; E. A. Brown, former chief production engineer, to superintendent of production.

The voluntary retirement of Will C. Grant as advertising director, and the appointment of James M. Floyd of the Fort Worth Division of Distribution to succeed him was also announced by President Hulcy. The change became effective April 1.

Eclipse Appoints A. N. Mason

Eclipse Fuel Engineering Co., Rockford, Ill., has appointed A. N. Mason as Eastern New York representative. He will be located at 53 Park Place, New York City.

Mr. Mason brings to his Company a wide background of experience, having spent some eight years in the gas combustion field.

Wygant Promoted by Titeflex Inc.

Gordon J. Wygant, formerly Sales Engineer for Titeflex, Inc., Newark, N. J., has been named Assistant Sales Manager, according to a recent announcement by Elbert E. Husted, president of the company.

Mr. Wygant will assist in directiong the sales and servicing of all Titeflex products, including "Titeflex" all-metal flexible tubing and an industrial filter employing a new principle for ease of cleaning. He joined the Titeflex organization in 1941.

Gordon J. Wygant

Fluor Corporation Issues Brochure on Cycling Plant

A colorful and well illustrated 32-page description of the South Coles Levee cycling plant has been issued by Fluor Corporation. This plant is typical of a new development in the oil industry to increase the productive life of a field by injecting stripped gas back into the reservoir to maintain pressure and keep the oil deposit from disintegrating.

Besides the many photographs, there is a four-color, stream-lined flow sheet in the center of the brochure which graphically depicts the various stages required in processing the well gas and condensate.

Copies are obtainable by writing The Fluor Corporation, Ltd., 2500 South Atlantic Boulevard, Los Angeles 22, California.

Research of Radiant Panel Heating Under Way

Meeting in Cleveland on March 7th, leaders of important segments of the heating, ventilating and air conditioning industry unanimously voted that the American Society of Heating and Ventilating Engineers should undertake the correlation and co-ordination of research of radiant panel heating.

The meeting, held at the Society's Research Laboratory, was attended by 110 persons representing trade associations, technical societies, manufacturers, government agencies, colleges and universities.

Representatives of various technical societies and trade associations expressed their unanimous approval of the need for research in panel heating and of the desirability of the ASH&VE taking the role of co-ordinator of that research.

L. P. Saunders, Chairman of the Committee on Research, is now in the process of selecting the Technical Advisory Committee on Panel Heating. Announcement of its personnel will be made at an early date.

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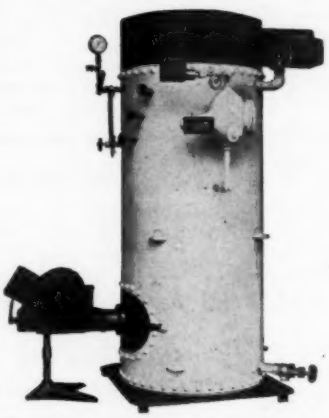
GAS — OIL BOILER
3 HP to 35 HP.



Burns natural gas or regular furnace oils with equal efficiency using same burner.

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unerring dependability
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High Pressure
RANGE:
Cu. Ft. of Gas Per Hour—100-10,000 M
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Difference in Absolute Pressure—Lbs. per sq. in., 1-500
Sum of Absolute Pressures—Lbs. per sq. in., 2000-20
Specific Gravity—1.5-.35
Length of Pipe—Feet 100-5000
Length of Pipe—Miles 1-250

Low Pressure
RANGE:
Cu. Ft. of Gas Per Hour—10 to 500 M
Pipe Diameter—¾" to 48" (including standard and actual weight up to 4")
Pressure Loss—Inches .01-10
Length of Pipe—Feet 30-30,000
Specific Gravity—1.5-.35
Constants—1400-1000

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American Gas Journal
53 Park Place, New York 17

Gas Journal (London) 1947 Directory and Handbook

This annual, published by Walter King, Ltd., 11 Bolt Court, Fleet Street, London, E. C. 4, gives a listing of gas undertakings and personnel in the British Isles, Canada, Australia and New Zealand. It also lists British-owned plants in foreign countries.

The Handbook section of 100 pages is devoted to manufactured gas, general information and tables. Some 260 pages cover manufacturers' products and engineering services.

Burdett Doubles Production Capacity in New Plant

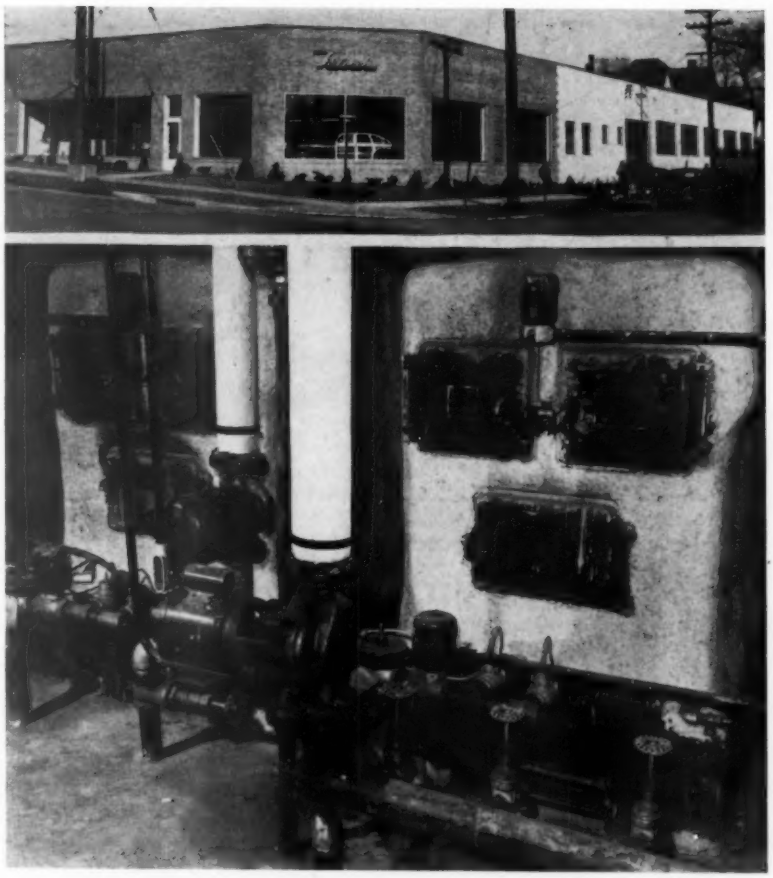
Burdett Manufacturing Company, manufacturers of infra-red gas burners, has moved to new quarters at 3433 West Madison Street, Chicago, Ill.

According to company officials, the recently doubled production capacity is the first phase of a broad development program to include extensive research on new and improved applications of infra-red gas heat, as well as fundamental research on the basic infra-red principle.

Cooling Equipment Guide: A new guide on cooling equipment has just been made available by the Santa Fe Tank and Tower Co. It embodies cooling towers, fin units, spray ponds, nozzles, etc.

The publication (C. E. 47) includes complete data on all the latest innovations in the Cooling Equipment Industry, plus timely information on current cooling problems.

Copy may be obtained from Santa Fe Tank and Tower Co., 5401 Boyle Avenue, Vernon, California.



GAS FIRED RADIANT HEATING SYSTEM FOR GARAGE

One of the first radiant heated garages in Ohio and one of the largest garage structures anywhere to incorporate this type of heating system—has been constructed by the East Akron Nash Company, Akron, O.

The one-story, basementless structure has four large and ten small rooms. Coils of wrought iron pipe, embedded in the concrete floors and supplied with hot water from a gas-fired boiler, comprise the radiant heating system. Balance cocks installed in individual rooms will govern flow of hot water, with over-all control of the system regulated by room-air thermostat.

This type of heating assures warm, dry floors and promotes the comfort and health of auto mechanics; quickly melts snow and ice that drop from recently admitted vehicles; permits subsequent changes in partitioning of the building without need for changing the heating system; reduces drafts through rooms; permits use of large glass areas without creating drafts or cold spots in the window zones; makes basementless construction practicable, and saves 20 to 40 per cent of fuel consumption, depending on layout and structural materials used.

Book Reviews

Chemical and Technical Dictionary. Edited by H. Bennett: 1055 pages 6 x 9. Chemical Publishing Co., 26 Court Street, Brooklyn 2, New York. Price $10.00.

This comprehensive volume carries about 50,000 definitions covering every field of scientific and technical development.

Written for both professionals and laymen, it contains a great many internationally accepted terms which facilitate mutual understanding between the scientist and technical worker of many countries.

Practical and easy to use, the nomenclature in this dictionary is that generally adopted by the chemist and engineer. Thousands of helpful cross-references are included, and arranged so that the desired terms can be located with a minimum of effort.

A special feature is an up-to-date compilation of thousands of trade-name or proprietary products in the synthetic resin, plastics, metal, rubber, textile, food, pharmaceutical, paint and varnish fields, including emulsifying and wetting agents, plasticisers, detergents, etc.

The definitions are concise, clear and to the point. Thousands of abbreviations, contractions, and many useful tables add to the value of this book.

The up-to-the-minute Addenda in the back of the Dictionary lists the newest trade names and definitions of additional technical terms.

Technical Dictionary: English-French and French-English. Terms in metallurgy, mining, electricity, chemistry and mechanics. By Francis Cusset, 591 pages 5¼ x 6¾. Chemical Publishing Co., 26 Court Street, Brooklyn 2, N. Y. Price $5.00.

A most useful companion for translating, writers and librarians working in these two languages. Correct equivalents can be found in suitable and convenient classification. Large type and brevity makes this dictionary a quick source of reference and in reasonable pocket size.

Bryant Heater Sales Conference

More than 100 distributors and their representatives attended the recent Bryant Heater 1947 annual sales conference at Tyler, Texas. The conference was held in Texas for the purpose of permitting distributor inspection of Bryant Heater's newest factory.

First models of new Bryant Heater products to make their future bow in the gas heating field were on display. These included new water heaters with anodic protection for hard water regions, new conversion burners, new circulating room heaters, new panel wall heaters, new steel unit heaters and steel furnaces of gravity, forced air and floor types. It also is in Bryant Heater's plans for the future to produce a twin installation to house the vertical model winter air conditioner and the water heater in matching cabinets.

1946 Directory of Electric and Gas Utilities Issued by Federal Power Commission

The Federal Power Commission has announced issuance of a new directory containing data on all of the electric and gas utilities in the United States as of January 1, 1946.

The directory covers 4,097 electric systems and 1,161 gas systems and contains the following information:

Name and address of utility, state of incorporation, name of controlling company, names of officials by functions, services rendered, utility plant investment and capacity, number of employees, quantity of electricity or gas distributed, sales by class of customers, voltage and cycles of electric energy or Btu content and kind of gas distributed, names of communities served and population of each.

Data for certain industrial electric plants serving communities of 250 or more population are also given.

Included in the directory are tabulations by State and geographic divisions showing electric utility generating capacity and generation by type of prime mover, nonutility electric generating capacity and generation by type of prime mover, utilization of electric energy, and sales to ultimate consumers by classes of service. For the items covered, the tabulations represent a comprehensive census of the electric utility industry for 1945.

The directory has been compiled from reports filed with the Federal Power Commission by the utility systems and from data supplied by the Rural Electrification Administration and the Tennessee Valley Authority.

The volume contains 489 pages and is bound in flexible buckram. The price is $5.00. It may be ordered from the Federal Power Commission, 1800 Pennsylvania Avenue, N.W., Washington 25, D. C. When ordering, refer to the publication as S-51.

Your industrial gas customers should know about

the NEW **NORWALK MODEL N-50 INSPIRATOR**

This new type represents the first notable design improvement in inspirators. It can be cleaned *in less than a minute!*

Only the Norwalk N-50 makes possible these extra *plus*-advantages for your inspirator-type system:

- **Lets Your Burners Operate with Constant, Even, Full Combustion**
- **Eliminates Soot Deposit**
- **Eliminates Burner Overheating by "Lazy" or "Soft" Flame Resultant from Rich Mixture Due to Insufficient Air**

Write today for the whole story:

NORWALK VALVE COMPANY

33 Railroad Ave., South Norwalk, Conn.

New Dresser Catalog Shows Complete Line

A full description of every Dresser product is contained in the new No. 47 Catalog, recently distributed by the Dresser Manufacturing Division. Consisting of 106 pages, this complete line catalog was designed to help engineers, superintendents and purchasing agents.

A novel feature, the "Visual Index," is conveniently placed in the front of the catalog. It illustrates 36 principal pipe joining and repair products together with brief descriptions of their uses and the page numbers on which details can be found.

The Catalog gives complete data necessary to specify and order Dresser Couplings for stee,l cast-iron and other pipe, Boltless couplings and fittings for small pipe, copper tubing, and service connections are described, as are all Dresser repair clamps and sleeves. Gasket information, facts on ordering, and tables of useful information are included.

Copies are available on request. Inquiries should be on Company letterhead and addressed to Dresser Manufacturing Division, Bradford, Pa.

C. F. Royse Joins Fluor Corp. as District Engr.

C. F. "Fred" Royse, formerly with the Griscom-Russell Company, has been appointed district engineer of The Fluor Corporation, Ltd., in charge of its Houston office.

Royse is a native Texan, graduating from Rice University with a degree in chemical engineering. Upon graduation he worked for the Humble Oil Company for over five years and, after Humble, he went to G-R for approximately the same length of time. He was located in the Houston area with these two firms.

H. A. Dresser Joins Santa Fe

The Santa Fe Tank and Tower Co., with its main office in Los Angeles, has announced the addition of Harold A. Dresser to its Engineering Staff. Mr. Dresser has taken over the Cooling Equipment Division of Santa Fe as part of a sustained program to enlarge its present facilities to cope with an ever-increasing clientele. This latest move represents a significant milestone in the history of Santa Fe. Dresser, an alumnus of the California Institute of Technology, has been associated with the cooling equipment industry since 1926.

For the past 15 years Dresser has been associated with the National Gasoline Association. He has written numerous articles on cooling towers for many engineering publications, and he has associated himself with research specialists in the highly technical field.

DANA D. BARNUM

Dana D. Barnum, past president of the American Gas Association, and for twenty years president of the Boston Consolidated Gas Company, died suddenly March 19 at his home in Washington, D. C. At the time of his death he was a member of the Contract Settlement Board of the War Department.

During the war years Mr. Barnum was actively engaged with the War Production Board in Washington, serving first with its Conservation Division and later, from 1942 to 1944, with the Office of War Utilities.

Born in Bethel, Connecticut, August 15, 1872, Mr. Barnum was graduated from Stevens Institute, New Jersey, as a mechanical engineer and rose from chemical, distribution and engineering work in the Worcester Gas Light Company to the position of chief engineer and finally president. He came to the Boston Consolidated Gas Company as its president on November 1, 1917.

In 1937 he retired from the presidency and was engaged as a consulting engineer by many companies in United States and Canada prior to starting his work with the War Production Board in 1942.

In addition to serving as president of the American Gas Association, Mr. Barnum was a past president of the American Standards Association, the Guild of Gas Managers of New England, and the New England Association of Gas Engineers. He was a member of Beta Theta Phi and Theta Nu Epsilon.

JOHN H. ALLEN

John H. Allen, founder and president of Everlasting Valve Company, Jersey City, N. J., died at his home, Orange, N. J., February 18th. Although 89 years old, he was in active management of the company until recently.

Well-known in engineering circles, he was a director of the Machinery Club of New York and was active in the National Association of Power Engineers.

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CONVERSION BURNERS

FOR SALE—Handley-Brown Conversion Gas Burners. Due to prohibitions on installations of new gas heating systems, we wish to dispose of surplus burners. Prices are F.O.B. delivery point. Model 1D each $43.00, Model 2D each $54.50. All new in original packages. Address Box 166, c/o American Gas Journal, 53 Park Place, New York 7, N. Y.

GAS ENGINEER

Major Pacific Coast gas range manufacturer desires to obtain for a permanent position, a graduate engineer experienced in gas range design, combustion practices and familiar with A.G.A. Laboratory testing procedures. Give complete details as to personal qualifications, age, experience, education, references, etc. Address Box 167, c/o American Gas Journal, 53 Park Place, New York 7, N. Y.

Meter Mechanic Available

Experienced meter making and meter repair man with background of 25 years of bench work and general mechanical knowledge, at present employed, wants to locate in the west, preferably California. Available immediately. Address Box 168, c/o American Gas Journal, 53 Park Place, New York 7, N. Y.

Heavy Duty Refractories

Norton Company, Worcester 6, Mass., has issued a most informative 22-page bulletin, No. 803, on Alundum and Crystolon refractories for industrial and laboratory use.

The properties and applications of these products are well set forth, giving also the forms in which they are available.

Included is a table for determining the usefulness of many types of commercial refractory products given in terms of relative factors of classification. Another complete table covers the properties of refractories—acid, neutral and basic.

Illustrations show fabricated shapes and furnace interiors.

Curves show relative thermal expansion and thermal conductivity of refractories at temperatures from 200 to 2800 degrees F. Additional tables cover atomic weights, melting points of metallic elements, conversion factors and a temperature conversion chart which includes melting points of cones. Copy on request.

Gas Appliance Connectors Bulletin on their "Tube-Tite" connectors is issued by Darra-James Corporation, Waterbury 91, Conn. These are of semi-rigid, non-collapsible aluminum tubing with special fittings, suitable for natural, manufactured or L.P. gas. Tube size is 5/8 in., with lengths from 24 to 60 inches. Copy on request.

Gas Jet Compressors Bulletin 4-F issued by Schutte & Koerting Company, 12th and Thompson Sts., Philadelphia 22, Pa., describes these units for mixing gases of different inlet pressures and heating values and discharging gas at intermediate pressure having a predetermined heating value. Adaptable for L.P. Gas-Air and for mixing manufactured and natural gas. Fully illustrated with diagrams and photos.

Gas Heating Unit. The "South Wind" small heating unit is described in a six page bulletin, No. 490, issued by Stewart-Warner Corporation, Indianapolis 7, Ind. Each self-contained unit can be placed in the wall, under the floor or in a closet or attic. Designed for small houses, may also be used as an auxiliary to central heating systems.

Flow Meter Handbook. The sixth edition of this handbook issued by Foxboro Company, Foxboro, Mass., gives complete data on orifice meter calculations. It covers principles and practice in flow meter engineering.

Automatic Controls. A 52-page Catalog pictorially illustrating Automatic Pressure, Temperature and Flow Controls for Gas, Oil, Air, Water, Steam, Refrigerants and other fluids is now available. Gives engineering data, including operating pressures and list prices for products of General Controls Co., 801 Allen Avenue, Glendale, California.

Industrial Management

(Continued from page 23)

bent upon management to define, defend and expand that area of influence which will permit it to continue as the responsible trustee for the consumer, the investor and the worker.

Having defined that area, management must permit no encroachments, regardless of the pressures which may be created by current sophistry, shotgun bargaining and collective coercion.

It is particularly important that the area of management which must be allocated to and preserved for the foremen shall be clearly defined and jealously defended. There are far too many establishments in which shop stewards and foremen compete for the loyalty of the workmen. A simple, unchangeable truth is that no man can serve two masters.

Another of these simple truths, often apparent in breach rather than in observance, is that responsibility always must be accompanied by an equal degree of authority, and that authority or power should not be granted without corresponding responsibility for its use.

Above all else in these days we need accurate measurements. The technical progress of industry has been a reflection of our ability to apply increasingly accurate methods of measurement to material things. The art of measuring psychological human dimensions is relatively undeveloped.

There is the vital technique of merit rating for factually recording the comparative performance value of each employee in his assigned work. Merit rating cannot be made to work without clear understanding and close attention from top management, and this is distinctly a management function.

Among modern methods of measurement in a vitally important field is job evaluation. At all costs this measuring stick must be retained as a function of management.

Most of us accept as a matter of fact the desirability of auditing the financial records of our business. In these days is not an audit of our industrial relations equally important.

Top management must acquire greater knowledge and skill with respect to the negotiation of labor agreements. Management must know its objectives and must make every effort to attain those objectives, and to avoid or overcome the many pitfalls and bear traps planted in the areas covered by labor agreement clauses with respect to seniority, wage structure, grievance procedures, arbitration and many other matters that will arise in the course of collective bargaining.

To all of the complexities of management we must bring to bear infinite patience and persistence, consistency and complete sincerity. Modern management has no place for men of doubtful courage.

Toward Closer Cooperation

Notwithstanding current obstacles, productivity probably will increase rapidly as the result of compelling forces which tend to encourage a high degree of mechanization and technological improvement in processing.

Our greatest opportunities for advancing productivity and improving living standards are to be found in the field of human relationships. Having achieved a better understanding of each other and their common responsibility to consumers and investors, both management and labor should do all in their power to convey to the American public comprehension of the simple moral, social and economic principles that underlie our industrial and business relationships.

Very appropriately, the first words that appear on the printed program for this fine, constructive conference are these: "Serving the Public Interest." Why shouldn't the public utilities and the manufacturers of America pool their vast experience and facilities and dedicate them to a great national project for public enlightenment? Where else can be found superior tools for doing this vitally important job which must be done if our self-interest is adequately to be served?

Mutual understanding must be achieved as the prerequisite for effective cooperation. "The proper study of mankind is man."

Presented at 20th Annual Business Conference, New England Gas Assn., Boston, March 20 to 21, 1947.

Welded Steel Pipe

(Continued from page 20)

line from the Colorado River to Santa Fe Springs.

Mr. Laulhere said that while in general orthodox methods of pipeline construction are to be used, the size and weight of the line posed several problems not encountered in the laying of lines of smaller size.

For pipes of this diameter, he pointed out, the largest type trenchers available must be employed. These trenchers, he declared, are capable of digging a trench 42 inches in width and 8 feet in depth. The plan for this project in general is to use a trench five feet in depth, which will provide 2½ feet of covering, except in cultivated districts where, according to Mr. Laulhere, the line may be laid at a depth of approximately 10 feet in order to provide additional protection against washouts.

Weld X-raying Being Used

Mr. Laulhere reported that the project program calls for all pipe to be welded in the field with the shielded arc electric welding process which, he said, develops the full strength of the pipe and assures perfect welds.

He stated that while this is the biggest high-pressure transmission-line yet to be built, it is not anticipated that any insurmountable difficulties will be encountered. Routine pipe line construction methods have been decided upon, but certain precautions have nevertheless been taken. Among these Mr. Laulhere cited the X-raying of approximately 10% of the welds, or one weld per welder per day.

"This has never been done on a gas transmission line before," Mr. Laulhere said, "but in view of the success of X-ray in the shipyards during the war, it was felt that the use of X-ray on this line will tend to keep the welders on their toes."

Sections of weld ells will be used for making angles in the field, which Mr. Laulhere cited as another departure from usual pipeline practice, since it has been customary to make them by what is known as the wrinkle process.

Southern California Gas Co. and Southern Counties Gas Co., which are collaborating in the construction of the line from the Los Angeles area to the Colorado River, look for completion of the project by midsummer. At the Colorado River near Blythe, the 214-mile California section, costing an estimated 15 million dollars, will connect with a 750-mile long line extending to the Hugoton and Permian Basin dry gas fields in New Mexico and Texas, which is being built by the El Paso Natural Gas Company of El Paso, Tex. Details of total cost, line capacity and inter-company purchase of gas were published in previous articles in the *American Gas Journal* (see Oct., 1945, issue, page 49, and Jan., 1946, issue, Page 15.).